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MAESTRO RHYTHM KING

MRK-1 SERVICE MANUAL

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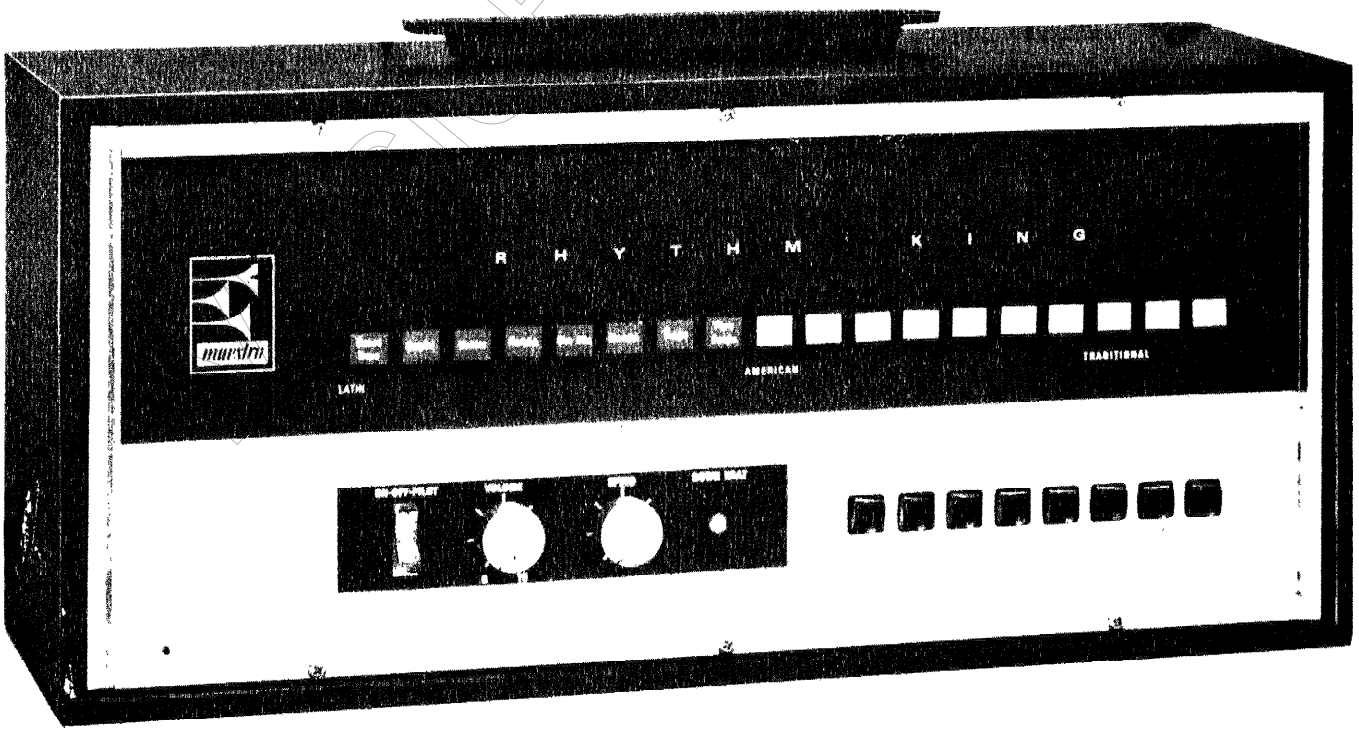

MAESTRO RHYTHM KING MRK-1 SERVICE MANUAL

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SPECIFICATIONS

MAESTRO RHYTHM KING—MODEL MRK-1—A completely transistorized automatic and manual rhythm device designed to be used with an amplifier, electronic organ, stereo, hi-fi, public address system, television or radio set. Dimensions: 9½" high x 19½" wide x 7" deep.

RHYTHM PATTERN PUSHBUTTONS—(May be played singly or in combination.)

Latin American (Red): Bossa Nova • Samba • Bolero • Rumba • Cha Cha • Mambo • Tango • Paso Doble.

American (Gold): Slow Fox • Slow Rock • Swing • Dixie • Shuffle • Go Go • Discotheque.

Traditional (Blue): March/Polka • Western • Waltz.

Individual Rhythm Voice Pushbuttons (Black) (Play singly or together . . . with or without Rhythm Pattern Voice Pushbuttons): Bass Drum • Snare Drum • Hi-Hat Cymbal • Cymbal • Tom Tom • Bongo • Blocks • Clave.

Controls: On/Off/Pilot Light • Volume Control • Speed Control • Downbeat Indicator Light • Foot-Switch.

Amplifier Connecting Cord (Equipped with standard ¼-inch phono-type plug.)

Adapter Cord—For connecting the Rhythm King to an electronic organ, stereo, hi-fi, public address system, television or radio set. Includes instructions for connection.

Accessories—Chrome Stand • Black Vinyl Cover

DESCRIPTION

CLOCK

The Clock is the heart of the Maestro Rhythm King. All timing pulses used to produce the various rhythms originate in the Clock. To aid in understanding how the clock operates a Clock Diagram is shown on page 9. Refer to the Clock Diagram and the Clock schematic on page 12 or 13 as you read the following description of how the Clock operates.

A. Observe the Clock Diagram, read the Legend and Notes.

B. Observe the inner ring of transistors Q1 through Q5 (Five Stage Multivibrator). Note how Q1-Q5 repeat four times, this represents the four cycles that constitute one **complete** Clock cycle.

C. Observe the arrows that interconnect transistors Q1 through Q5. These arrows show the triggering pulse sequence. (Q1 triggers Q2 etc.) The inner ring of transistors must operate in order for the clock to run at all.

D. Observe transistor Q16 (Stabilizer). Note how "Multi" transistor Q5 sends a pulse to Q16 (shown by arrows) and Q16 in turn sends a pulse to Q2. This is done to insure proper "Multi" Operation at slow tempos by preventing Q2 from being in any state except "off" when it receives its trigger pulse from Q1.

E. Observe the arrows radiating **out** from each "Multi" transistor Q1-Q5. These arrows represent the "Multi" output pulses. Each output pulse from Q1-Q5 triggers an individual Pulse Amp Q6-Q10 in all four clock cycles.

F. Observe transistors Q11-Q15 (Five Stage Logic Sequencer). Note the heavy broken lines running from each transistor. These broken lines represent a "closed gate" (positive voltage) that prevents Pulse Amp trigger pulses from reaching certain Logic Gate transistors. Only **one** Logic Sequencer transistor may be in a "closed gate" condition. When a Logic Sequencer transistor receives a pulse from a Pulse Amp transistor the "closed gate" connected to that Logic Sequencer transistor is opened, producing a pulse that is sent to the next Logic Sequencer transistor which then produces its "closed gate".

The Clock is started by depressing the Reset Foot Switch which triggers Q11 and Q1. Q11 sets up its "closed gate" and Q1 triggers Q2 and Q6, beginning the 1st cycle of the Clock operation

1ST CYCLE:

1. Q1 triggers Q2 (see #2 below) and Q6, Q6 in turn triggers Q28 and Q28 triggers Q30-31 the Down Beat Indicator. Q6 also sends a pulse to Q27 which is blocked by the "closed gate" from Q11. Although a pulse is shown on the Clock Diagram from Q6 to Q15, this pulse has no effect when the Clock is initially started.

2. Q2 triggers Q3 (see #3 below) and Q7, Q7 in turn triggers Q26. Q7 also sends a pulse to Q25 which is blocked by the "closed gate" from Q11.

3. Q3 triggers Q4 (see #4 below) and Q8, Q8 in turn triggers Q24.

4. Q4 triggers Q5 (see #5 below) and Q9, Q9 in turn triggers Q22. Q9 also sends a pulse to Q21 which is blocked by the "closed gate" from Q11.

5. Q5 triggers Q16 (see D above), Q1 (see #6 below) and Q10, Q10 in turn triggers Q11 opening its gate which triggers Q18 and Q12. Q12 at this time sets up its "closed gate". Q10 also triggers Q17 and Q20 after it triggers Q11. In addition a pulse is sent from Q10 to Q19 which is blocked by the "closed gate" from Q12.

2ND CYCLE:

6. Q1 triggers Q2 (see #7 below) and Q6, Q6 in turn triggers Q27. Q6 also sends a pulse to Q28 which is blocked by the "closed gate" from Q12.

7. Q2 triggers Q3 (see #8 below) and Q7, Q7 in turn triggers Q25. Q7 also sends a pulse to Q26 which is blocked by the "closed gate" from Q12

8. Q3 triggers Q4 (see #9 below) and Q8. Q8 sends a pulse to Q24 which is blocked by the "closed gate" from Q12.

9 Q4 triggers Q5 (see #10 below) and Q9, Q9 in turn triggers Q12 opening its gate which triggers Q29 and Q13. Q13 at this time sets up its "closed gate". Q9 also triggers Q21 after it triggers Q12 In addition a pulse is sent from Q9 to Q22 which is blocked by the "closed gate" from Q13.

10. Q5 triggers Q16 (see D above), Q1 (see #11 below) and Q10, Q10 in turn triggers Q17 and Q19. Q10 also sends a pulse to Q20 which is blocked by the "closed gate" from Q13.

3RD CYCLE:

11. Q1 triggers Q2 (see #12 below) and Q6, Q6 in turn triggers Q28 and Q28 triggers Q30-31 the Down Beat Indicator. Q6 also sends a pulse to Q27 which is blocked by the "closed gate" from Q13.

12. Q2 triggers Q3 (see #13 below) and Q7, Q7 in turn triggers Q26. Q7 also sends a pulse to Q25 which is blocked by the "closed gate" from Q13.

13. Q3 triggers Q4 (see #14 below) and Q8, Q8 in turn triggers Q24.

14. Q4 triggers Q5 (see #15 below) and Q9, Q9 in turn triggers Q13 opening its gate which triggers Q18 and Q14. Q14 at this time sets up its "closed gate". Q9 also triggers Q22 after it triggers Q13 In addition a pulse is sent from Q9 to Q21 which is blocked by the "closed gate" from Q14.

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15. Q5 triggers Q16 (see D above), Q1 (see #16 below) and Q10, Q10 in turn triggers Q17 and Q20. Q10 also sends a pulse to Q19 which is blocked by the "closed gate" from Q14.

4TH CYCLE:

16. Q1 triggers Q2 (see #17 below) and Q6, Q6 in turn triggers Q27. Q6 also sends a pulse to Q28 which is blocked by the "closed gate" from Q14.

17. Q2 triggers Q3 (see #18 below) and Q7, Q7 in turn triggers Q14 opening its gate which triggers Q23 and Q15. Q15 at this time sets up its "closed gate". Q7 also triggers Q25 after it triggers Q14. In addition a pulse is sent from Q7 to Q26 which is blocked by the "closed gate" from Q15.

18. Q3 triggers Q4 (see #19 below) and Q8, Q8 in turn sends a pulse to Q24 which is blocked by the "closed gate" from Q15.

19. Q4 triggers Q5 (see #20 below) and Q9, Q9 in turn triggers Q21. Q9 also sends a pulse to Q22 which is blocked by the "closed gate" from Q15.

20. Q5 triggers Q16 (see D above), Q1 (see #21 below) and Q10, Q10 in turn triggers Q17 and Q19. Q10 also sends a pulse to Q20 which is blocked by the "closed gate" from Q15.

21. Q1 triggers Q2 (see #2 above) and Q6, Q6 in turn triggers Q15 and Q29. Q15 then opens its gate triggering Q11. Q11 at this time sets up its "closed gate". Q6 also triggers Q28, 30-31 the Down Beat Indicator. In addition, Q6 sends a pulse to Q27 which is blocked by the "closed gate" from Q11. This concludes the **complete** Clock cycle. As the Clock continues running it keeps repeating the above 2 through 21 steps. Step 1 is used only when the Clock is initially started by the Reset Foot Switch. The interval between "Multi" pulses is changed when Rhythm Selector Switches that contain triplet timing contacts are depressed. This change of pulse timing is done to select the correct rhythm timing for eight of the Rhythm Patterns. When referring to the Clock, Matrix or Rhythm Selector Switch schematics as well as photos of the Maestro circuits, Clock output pulses may be recognized by the circles drawn around them. Clock output pulses are **circled** numbers only.

MATRIX

Individual Clock output pulses are combined and isolated at the Matrix. This includes all Clock output pulses except 2 and 17 which are connected directly to the Rhythm Selector Switches.

Some special pulses are produced by combining Clock output pulses through diodes in the Matrix. All Matrix output pulses are connected to the Rhythm Selector Switches. Matrix output pulses are shown as single numbers and number combinations. They are not circled or boxed and they connect directly to the Rhythm Selector Switches.

The common forms of Matrix diode failure and their symptoms are listed in chart form below. Note that in most cases the symptoms are quite subtle and therefore will require careful listening.

MATRIX DIODE CHART

Diode	Rhythm Affected	Diode Shorted	Diode Open
D11	March Polka	Too many Snare Drum Beats.	Snare Drum Roll too long.
D12	March Polka	Missing Snare Drum Beats.	Missing a few Snare Drum beats.
D13	March Polka & Tango	Extra Snare Drum Rolls.	Snare Drum Rolls too long.
D14	Swing	No Bass Drum on down Beat.	Extra Bass Drum Beat.
D15	Go-Go	Snare Drum Rolls.	Snare Drum always the same.
D16	Rumba	One Clave beat missing.	Extra Clave Beat.

RHYTHM SELECTOR SWITCHES

Combined and isolated Clock output pulses (from the Matrix), two direct Clock output pulses, Tempo B+ and four control functions (ground, +6 volts Z and Y) are connected in various combinations as shown on the Selector Switch schematic to the ten switch contacts on the eighteen Rhythm Selector Switches. When a switch is depressed the particular combination of above functions connected to that switch is applied to the indicated Instrumentation keying points (shown boxed).

Listed below are the control functions, the two direct Clock pulses and the Instrumentation effect they produce plus an example rhythm.

	Control or Direct Clock Pulse	Instrumentation	Effect	Rhythm Example
1.	Y and Z	Cymbal	Choked	Bosa Nova
2.	Y	Cymbal	Maracas	Bolero
3.	Z	Cymbal	Long	Waltz
4.	②	Cymbal	Accent	Mambo
5.	Ground and +6 volts	HiHat	Med. Choked	Go-Go
6.	+6 volts	Hi-Hat	Choked	Disco
7.	Ground	Hi-Hat	Med. or Long	Dixie-Slow Fox
8.	⑰	Hi-Hat	Dampened	Swing

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INSTRUMENTATION

BASS DRUM GENERATOR
TOM TOM GENERATOR
BONGO GENERATOR
BLOCKS GENERATOR
CLAVE GENERATOR
LO DRUM GENERATOR
HI DRUM GENERATOR
RIM SHOT GENERATOR

These rhythm voice generators are Audio Oscillators. They produce an audio signal of diminishing amplitude when triggered by a pulse from their associated Pulse Amp, which receives its trigger pulse from the Matrix via the Rhythm Selector Switches. In addition the Bass Drum, Tom Tom, Bongo, Block and Clave may be triggered by their rhythm push buttons. A special keying point labeled soft is included on the Lo Drum Generator for the Bolero rhythm only. A pulse or series of pulses from the Snare Drum trigger (Q52-53) is connected to the Hi and Lo Drum generators. (See Snare Drum). The output signal from each generator circuit connects to the Audio Output Preamp Q62.

NOISE GENERATOR

B+ voltage applied to the emitter of this transistor causes the internal base emitter junction to produce continual random noise (Zener breakdown). The output of the noise generator is connected to the Snare Drum, Hi-Hat and Cymbal Noise Amps (Q56, 59 & 60).

SNARE DRUM

The Snare Drum is produced by the Snare Drum Trigger circuit (Q54, 53 & 52) when it receives a pulse from the Rhythm Selector Switches at the boxed keying points X and SD. The Snare Drum Trigger produces two keying pulses which key three circuits simultaneously, Hi Drum/Lo Drum generators and the Snare Drum Noise Amp. The output signal noise from the Snare Drum Noise Amp connects to the Snare Drum Gate where it is voiced and wave-shaped before reaching the Audio Output Preamp Q62.

CYMBAL & HI-HAT CYMBAL

Each of these circuits receive pulses at their boxed keying points from the Rhythm Selector Switches as well as the special control functions listed previously under Rhythm Selector Switches. The keying of the Cymbal or Hi-Hat Noise Amp by their respective trigger circuits allows amplified noise signal to reach the Gate circuits where voicing is accomplished. The control functions from the Rhythm Selector switches determine the type of "envelope" the Hi-Hat or Cymbal sound will have. For instance "choked" Cymbal or Hi-Hat would be a strong initial signal which quickly drops to about one third intensity where upon the signal then gradually decays to zero. The effect musically is similar to a drummer hitting the cymbal with his stick and then touching the cymbal momentarily with his hand.

INSTRUMENTATION ADJUSTMENTS

VR1 BASS DRUM

The Bass Drum adjustment affects the "length" of the Bass Drum tone. Adjusting the Bass Drum length is similar to adjusting the head of an actual Bass Drum. Repeatedly depress the Bass Drum push button while turning the Bass Drum adjustment with a small regular screwdriver. Too little Bass Drum length will cause the Bass Drum to sound dead, too much and the Bass Drum will sound continuously.

VR2 TOM TOM

The Tom Tom adjustment affects the "length" of the Tom Tom tone. Adjusting the Tom Tom length is similar to adjusting the head of an actual Tom Tom drum. Repeatedly depress the Tom Tom pushbutton while turning the Tom Tom adjustment with a small regular screwdriver. Too little Tom Tom length will cause the Tom Tom to sound dead, too much and the Tom Tom will sound continuously.

VR3 BONGO

The Bongo adjustment affects the "length" of the Bongo tone. Adjusting the Bongo length is similar to adjusting the head of an actual Bongo drum. Repeatedly depress the Bongo pushbutton while turning the Bongo adjustment with a small regular screwdriver. Too little Bongo length will cause the Bongo to sound dead, too much and the Bongo will sound continuously.

VR4 BLOCK

The Block adjustment affects the "length" of the Block tone. Repeatedly depress the Block pushbutton while turning the Block adjustment with a small regular screwdriver. Too little Block length will cause the Block to sound dead, too much and the Block will sound continuously.

VR5 CLAVE

The Clave adjustment affects the "length" of the Clave tone. Repeatedly depress the Clave pushbutton while turning the Clave adjustment with a small regular screwdriver. Too little Clave length will cause the Clave to sound dead, too much and the Clave will sound continuously.

VR6 RIM SHOT

The Rim Shot adjustment affects the "length" of the Rim Shot tone. Depress the Western Rhythm Selector Switch and turn the Rim Shot adjustment with a small regular screwdriver. Too little Rim Shot length will cause the Rim Shot to sound dead, too much and the Rim Shot will ring or sound continuously.

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VR7 HI DRUM

Depress the Cha-Cha Rhythm Selector Switch, set the Tempo (speed) to "slow" and turn the Hi Drum adjustment with a small screwdriver. Too little Hi Drum length will cause the Hi Drum to sound dead, too much and the Hi Drum will ring or sound continuously.

VR8 LO DRUM

Depress the Paso Doble Rhythm Selector Switch, set the Tempo (speed) to "slow" and turn the Lo Drum adjustment with a small screwdriver. Too little Lo Drum length will cause the Lo Drum to sound dead, too much and the Lo Drum will ring or sound continuously.

IMPORTANT

Adjusting Hi Drum and Lo Drum will also effect the voicing of the Snare Drum. See Snare Drum Noise volume adjustment.

VR9 SNARE DRUM SPEED

The rate of roll or beat of the snaredrum may be adjusted using a small regular screwdriver. Proper speed is approximately 15 to 20 beats per second. Take into consideration customer preference.

VR10 CYMBAL VOLUME

The Cymbal volume may be adjusted using a small regular screwdriver. Generally the best setting is one at which the Cymbal sounds "balanced" as compared to the other instruments in various rhythms. Take into consideration customer preference.

VR11 HI-HAT CYMBAL VOLUME

The Hi-Hat Cymbal volume may be adjusted using a small regular screwdriver. Generally the best setting is one at which the Hi-Hat sounds "balanced" as compared to the other instruments in various rhythms. Hi-Hat should be quite a bit louder than Cymbal. Take into consideration customer preference.

VR12 SNARE DRUM NOISE VOLUME

The Snare Drum Noise component may be adjusted using a small regular screwdriver. Since Hi Drum and Lo Drum are also part of Snare Drum be sure these instruments function normally before adjusting the Snare Drum noise. Proper adjustment of the Snare Drum noise is achieved when the Hi Drum, Lo Drum and noise blend together producing the most realistic Snare Drum sound.

TROUBLE SHOOTING GUIDE

GENERAL

It is the function of the **Clock** to produce a series of voltage pulses in a specific rhythmical pattern. These pulses are then combined in several different ways in the **Matrix.** The combined pulses are connected to Rhythm Selector Switches where they are routed to the desired **Instrumentation** circuits. When the Instrumentation circuits receive the Clock pulses they produce the rhythm voices which are then amplified by the Audio Output Preamp and sent to a suitable **Amplifier.**

Failure of the **Clock** will result in:

1. No rhythms at all, however, the Rhythm pushbuttons will operate.
2. Uneven, incomplete or wild running rhythms.

Failure of the **Matrix** will result in:

1. Incomplete rhythms or possibly extra beats in some rhythms.

Failure of a **Rhythm Selector Switch** will result in:

1. A single incomplete rhythm or possibly uneven rhythm if trouble is located in triplett timing switch contacts.

Failure or improper adjustment in the **Instrumentation** will result in:

1. Incomplete rhythms.
2. Poor sound quality of a specific rhythm instrument. (This may easily be detected on most rhythm voices by trying the rhythm pushbuttons.)
3. A continuous sound with Rhythm Selector Switches "off".
4. Rhythm and rhythm pushbuttons sound weak or not at all.

Failure in the **Power Supply.**

1. Completely Dead unit.
2. Unstable rhythm speeds.
3. No rhythms, but, rhythm pushbuttons work.

DETAILED

1. NO RHYTHMS AT ALL, NOTHING HAPPENS WHEN RESET FOOT SWITCH IS DEPRESSED, BUT RHYTHM PUSHBUTTONS FUNCTION NORMALLY.

A. Failure of the 5 Stage Multivibrator most likely Q1.
B. Failure of 6 Volt Power Supply Voltage. Suspect Zener diode Z2.
C. Failure of Reset Foot Switch contacts to open.

2. RHYTHM STARTS, BUT DOES NOT KEEP RUNNING.

A. Q2, Q3, Q4 and Q5 of 5 Stage Multivibrator.
B. The Stabilizer Q16.

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3. NON-RHYTHMIC RHYTHM PATTERNS.

A. Slow speeds only.
   a. Failure of the Stabilizer Q16.
   b. Failure of the feed back diodes D1, D2, D3, D4 or D5.
   c. Failure of any one of the 5 Stage Multivibrator transistors Q1 thru Q5 (low gain).

B. All speeds.
   a. Any one of the 5 Stage "Multi" transistors Q1 thru Q5 (slightly low gain).
   b. Shorted feed back diodes D1, D2, D3, D4 or D5.
   c. 5 Stage "Multi", 5% tolerance tempo supply resistors out of tolerance range.
   d. Failure in the Power Supply, Regulator Q63 and Zener diodes Z1 or Z2.
   e. Failure of Rhythm Selector Switch Triplett timing contact.

4. INCOMPLETE RHYTHMS

A. Failure of any one of the 12 Logic Gate transistors.
B. Failure of any one of the 5 Pulse Amp transistors.
C. Failure of any one of the 5 Logic Sequencer transistors.
D. Failure of one of the Matrix diodes. (See Matrix diode chart)
E. Failure of Instrumentation rhythm voice generator. (In most cases, this can be checked by pushing the Rhythm Pushbuttons.)
F. Failure of a Rhythm Selector Switch contact.

5. EXTRA RYHTHM BEATS

A. Failure of a 5 Stage Logic Sequencer transistor.
B. Failure of a Logic Gate transistor.
C. Failure of one of the Matrix diodes. (See Matrix diode chart.)

6. UNIT COMPLETELY DEAD

A. Check fuse, A.C. cord and power source.
B. Failure of Power Supply T1, D32-33, Q63.
C. Failure of Audio Output Preamp Q62.
D. Be sure that the amplifier used with the MRK-1 is not at fault.

7. INSTRUMENTATION

A. Failure of a specific Instrument Generator (See Instrumentation and Instrumentation Schematic.)
B. A continuous sound. Nothing will affect this sound except the volume control. (See Instrumentation Adjustments.)
C. Poor sound quality of a specific rhythm voice. (See Instrumentation Adjustments.)
D. Improper volume relationship between cymbals and drums. (See Instrumentation Adjustments.)

CLOCK TRANSISTOR COLLECTOR VOLTAGES

Transistor	Circuit	Reset "Off"	Reset "On"	Pulse Voltage
Q1		+5	Ø	+5
Q2	5	Ø	Ø	+5
Q3	Stage	Ø	Ø	+3
Q4	Multi	Ø	Ø	+3
Q5	Vibrator	Ø	Ø	+5
Q6		+.1	.2	+.3
Q7	5	+.1	.2	+.3
Q8	Pulse	+.1	.2	+.3
Q9	Amps	+.1	.2	+.3
Q10		+.1	.2	+.3
Q11		+12	Ø	+13
Q12	5	Ø	Ø	+13
Q13	Stage	Ø	Ø	+13
Q14	Logic	Ø	Ø	+13
Q15	Sequencer	Ø	Ø	+13
Q16	Stabilizer	Ø	Ø	+5
Q17	Hi-Hat Cymbal Dampen Control	Ø	Ø	+.5*
Q18		+.2	.2	+.3
Q19		+.2	.15	+.25
Q20		+.2	.15	+.25
Q21	12	+.2	.15	+.25
Q22	Logic	+.2	.15	+.25
Q23	Gates	+.3	.3	+.4
Q24		+.2	.15	+.25
Q25		+.2	.15	+.25
Q26		+.2	.15	+.25
Q27		+.2	.15	+.25
Q28		+.2	.15	+.25
Q29		+.2	.2	+.3
Q30	Down	+17	+17	+7
Q31	Beat Indicator	Ø	Ø	+7

*Swing Rhythm Only.

IMPORTANT

The above voltage readings were measured to ground with a Simpson Model 260 V.O.M. Voltage readings shown are intended only as a guide in troubleshooting. Voltages will vary from unit to unit due to normal manufacturing tolerances.

CAUTION

Exercise extreme care when making voltage measurements. Accidental shorting of transistor leads may damage transistors.

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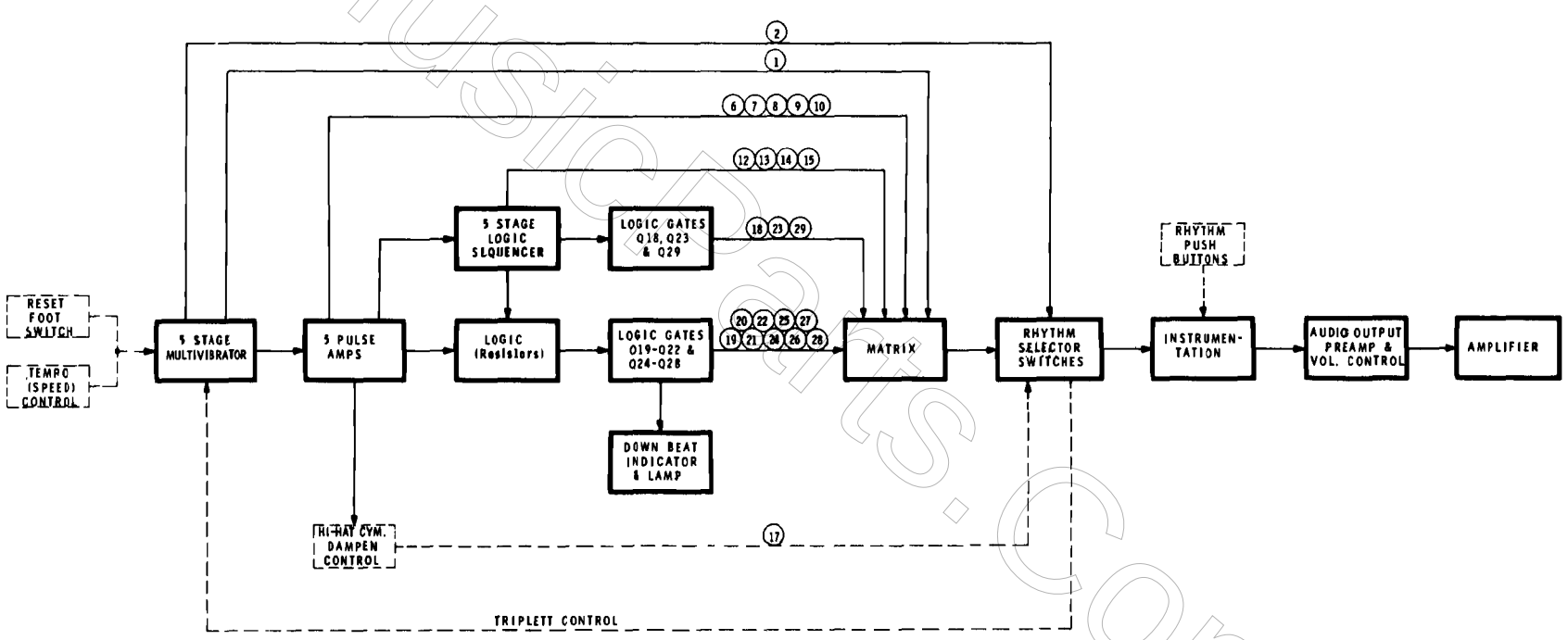
BLOCK DIAGRAM

MRK-I



LEGEND

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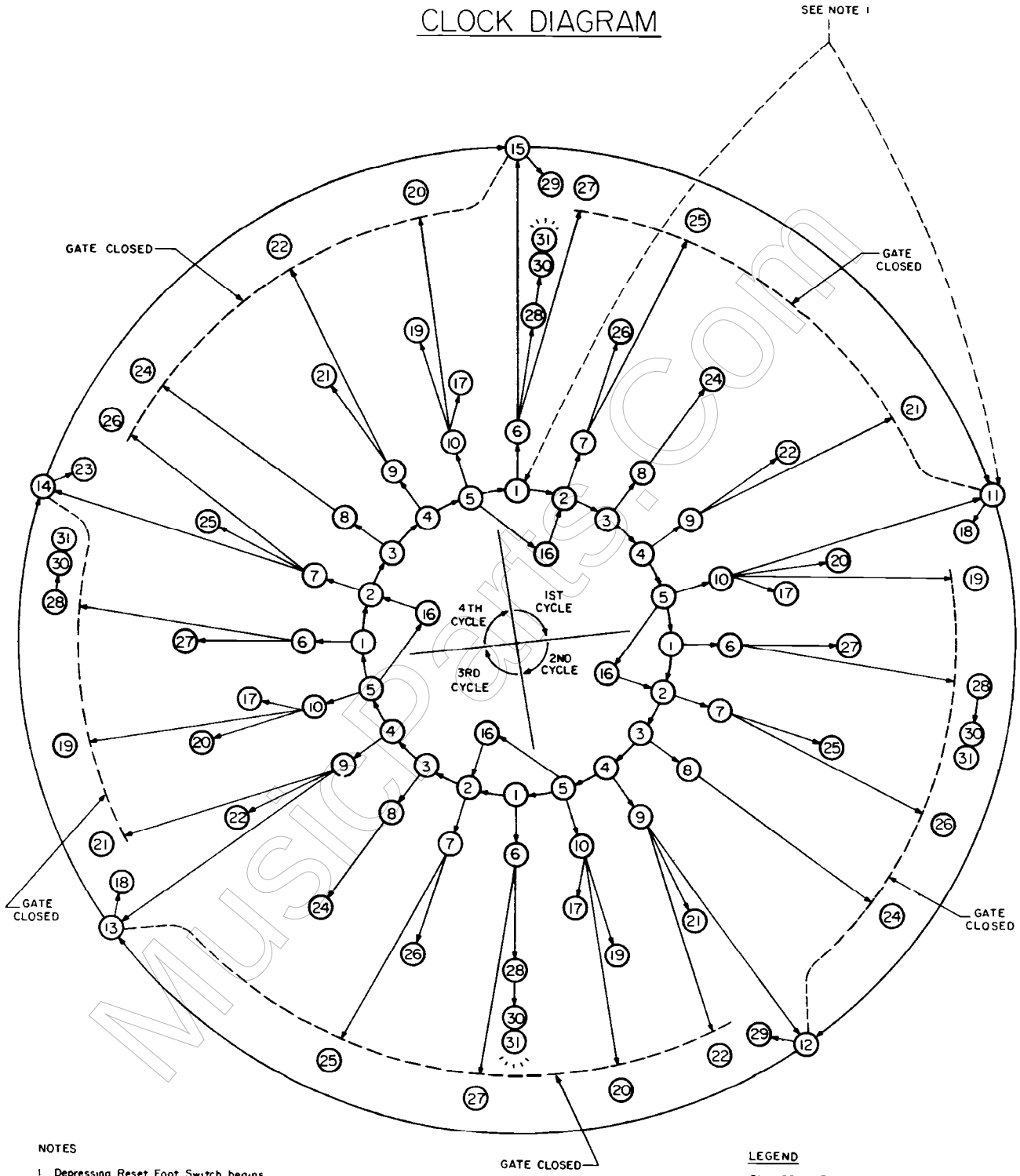
CLOCK DIAGRAM



NOTES

1. Depressing Reset Foot Switch begins Clock operation by activating Q1 & Q11
2. Q15 & Q29 not triggered at beginning of Clock operation
3. Circled numbers "1" thru "31" represent transitors labeled Q1 thru "Q31" on "Clock" Schematic (See dwg no 1)

LEGEND

Q1 to Q5	Five Stage Multivibrator
Q6 to Q10	Five Pulse Amps
Q11 to Q15	Five Stage Logic Sequencer
Q18 to Q29	Twelve Logic Gates
Q30 & Q31	Down Beat Indicator
Q17	Hi-Hat Dampen Control
Q16	Stabilizer

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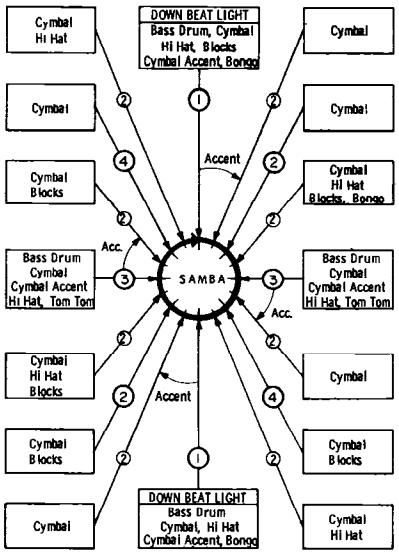
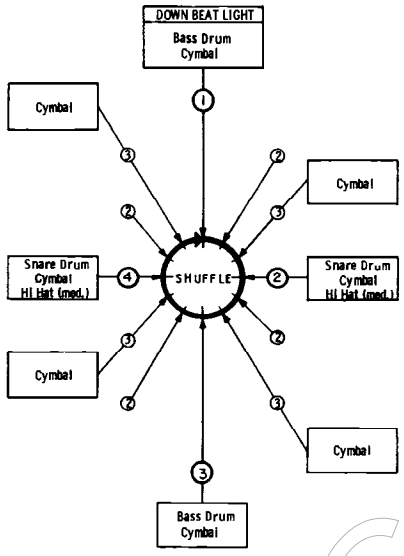
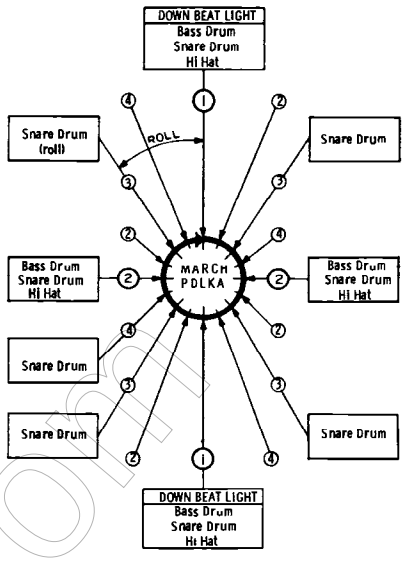
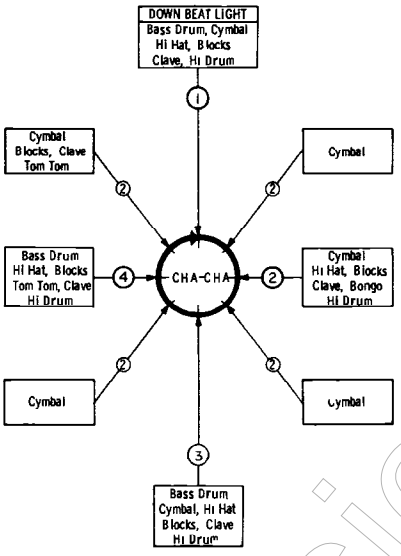
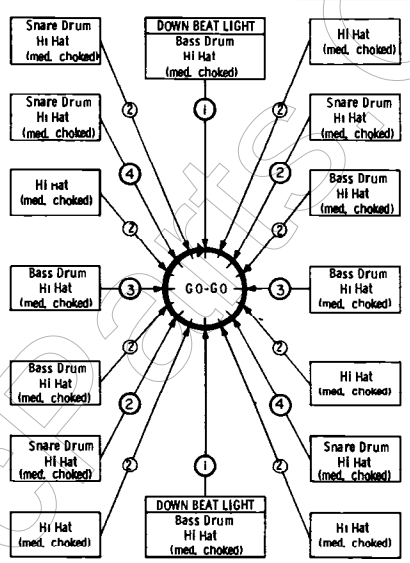
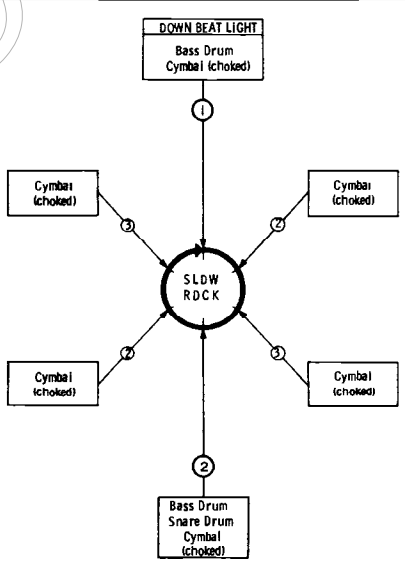


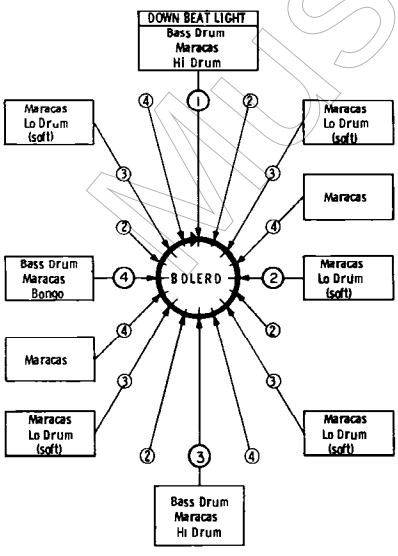


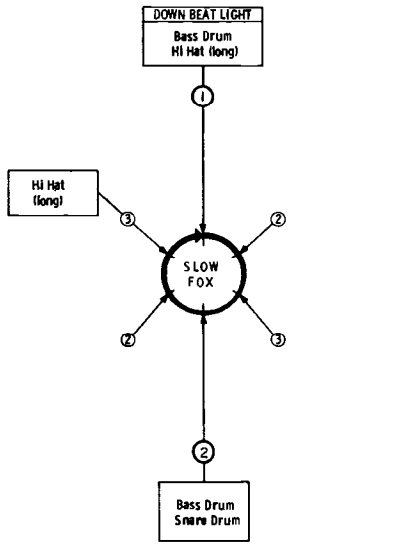


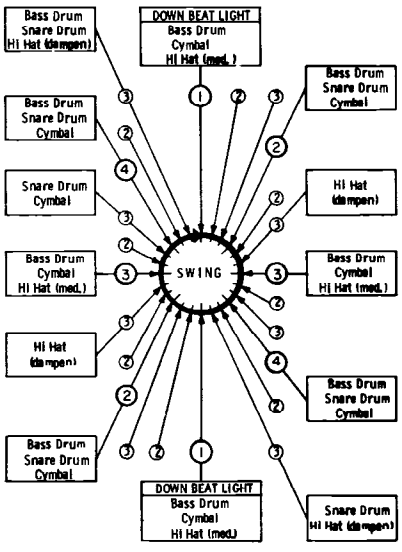




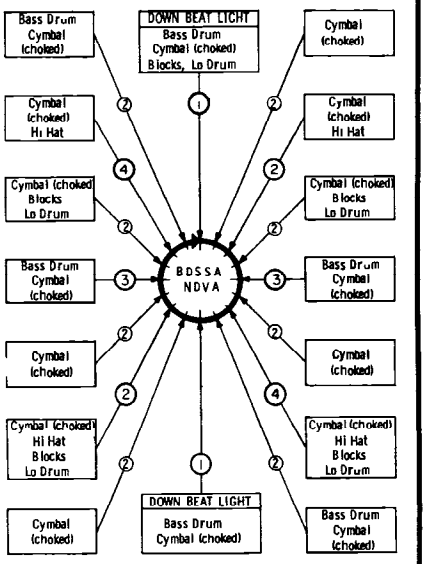


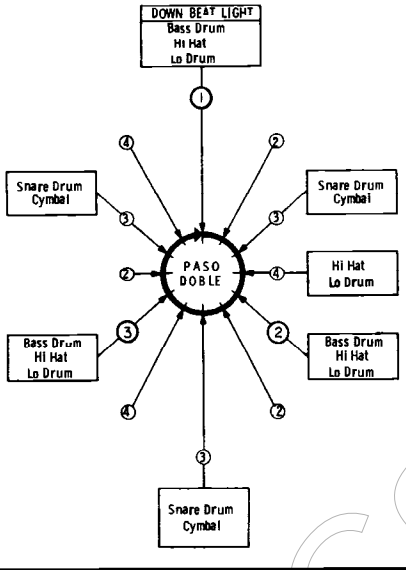


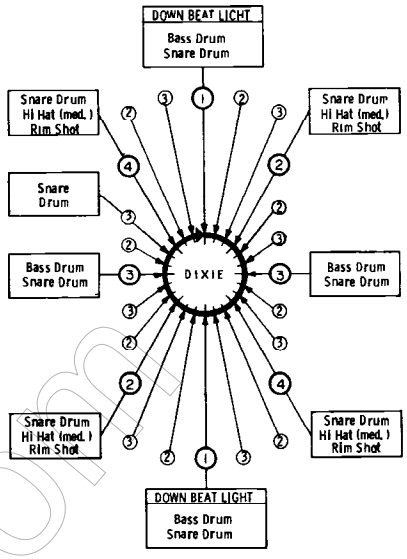


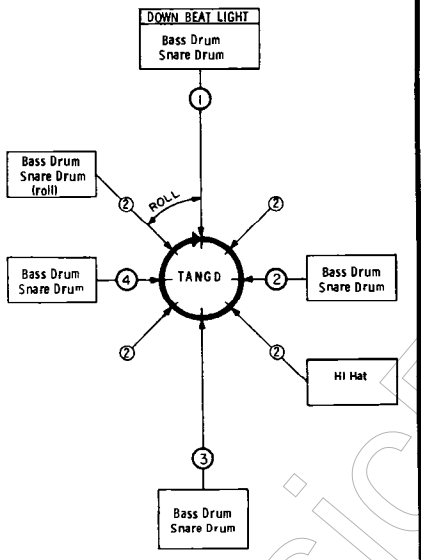


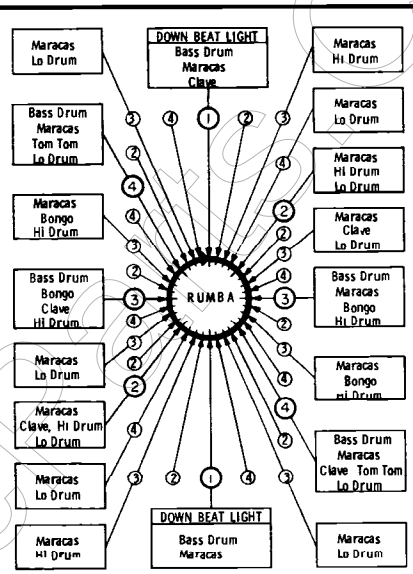
MusicProfits.com

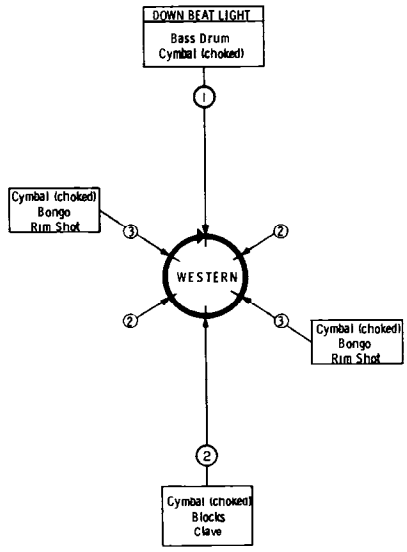


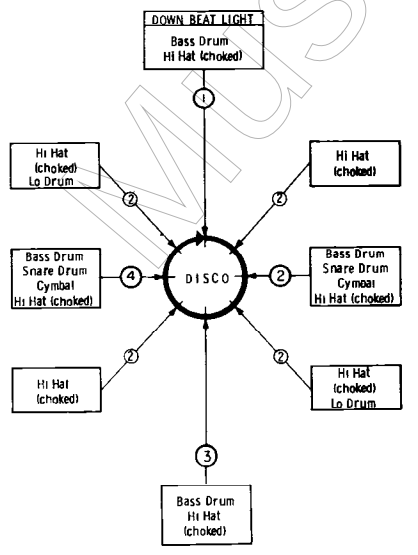


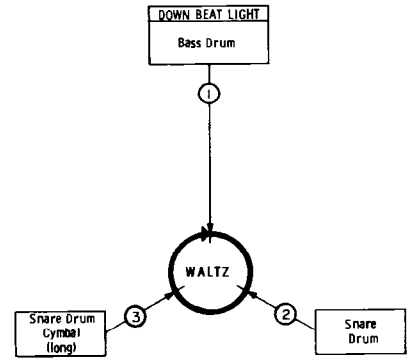








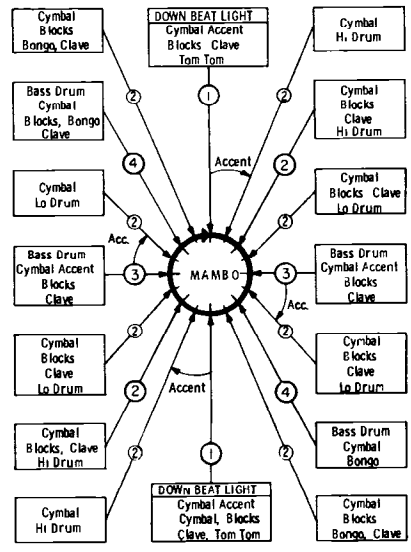




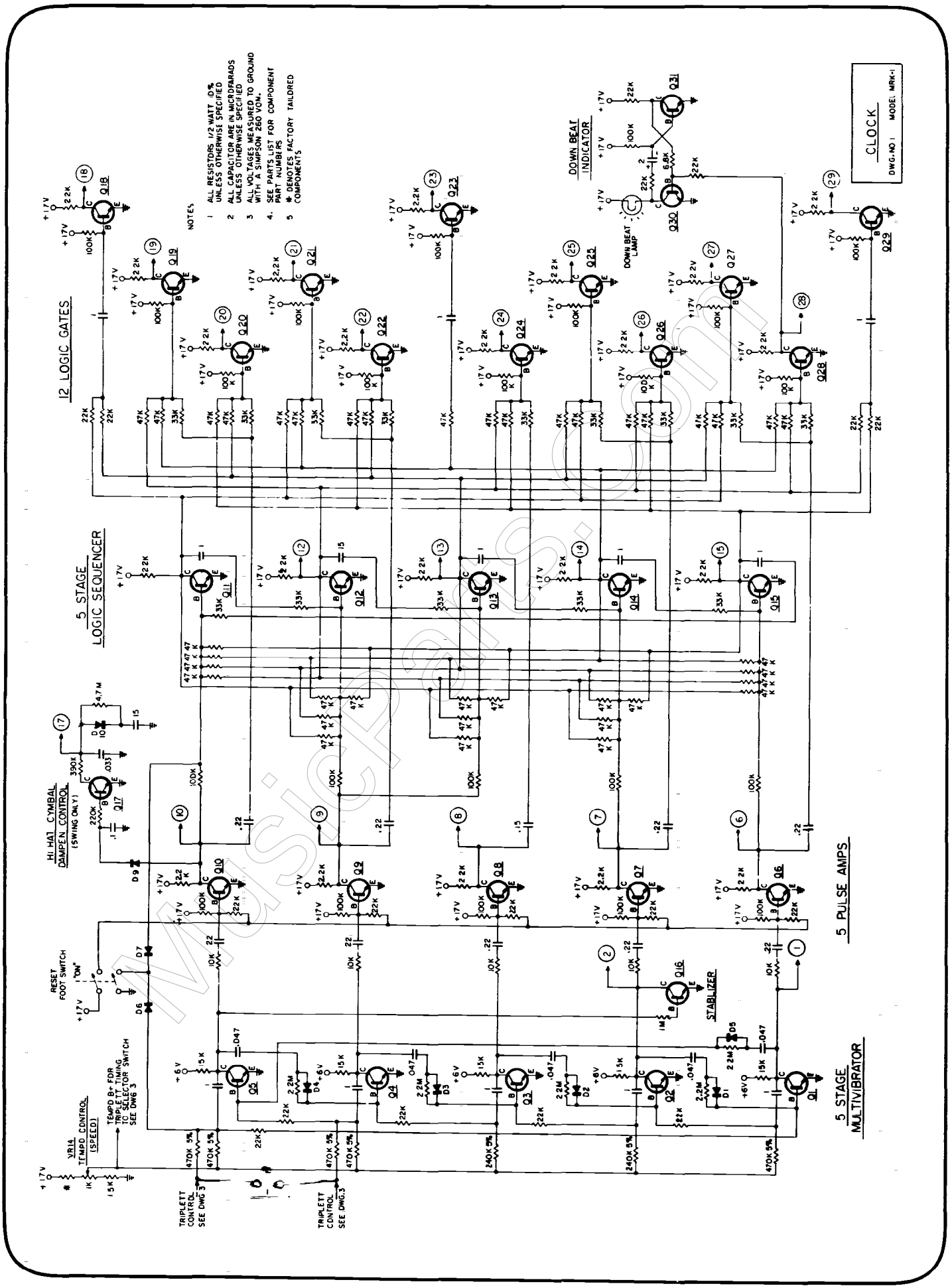
RHYTHM PATTERNS

1 All rhythms begin at the top of each rhythm pattern and then proceed in a clockwise direction

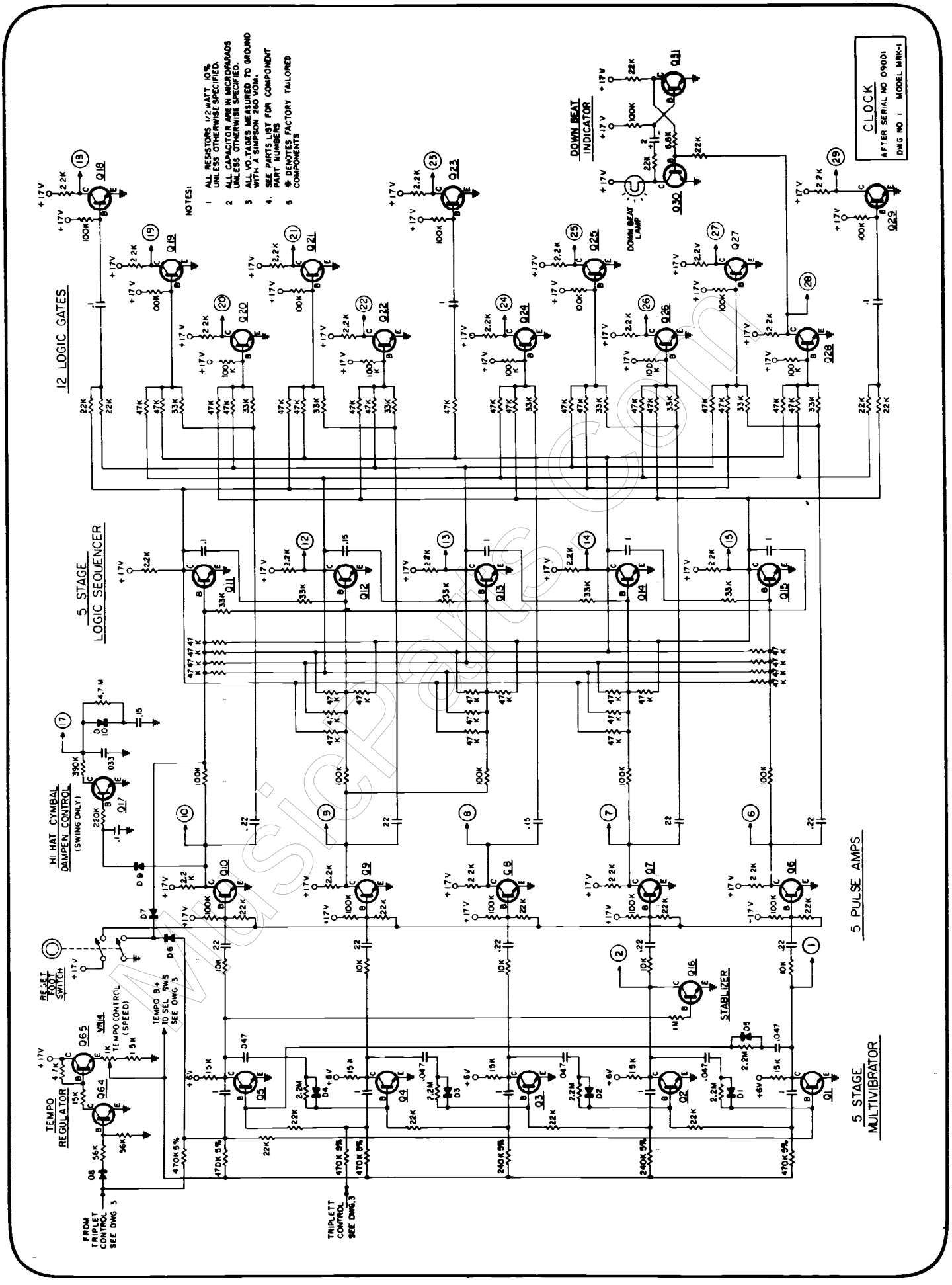
2 Large circled numbers represent primary rhythm beats. Small circled numbers represent secondary rhythm beats. Secondary rhythm beats may or may not have instrumentation



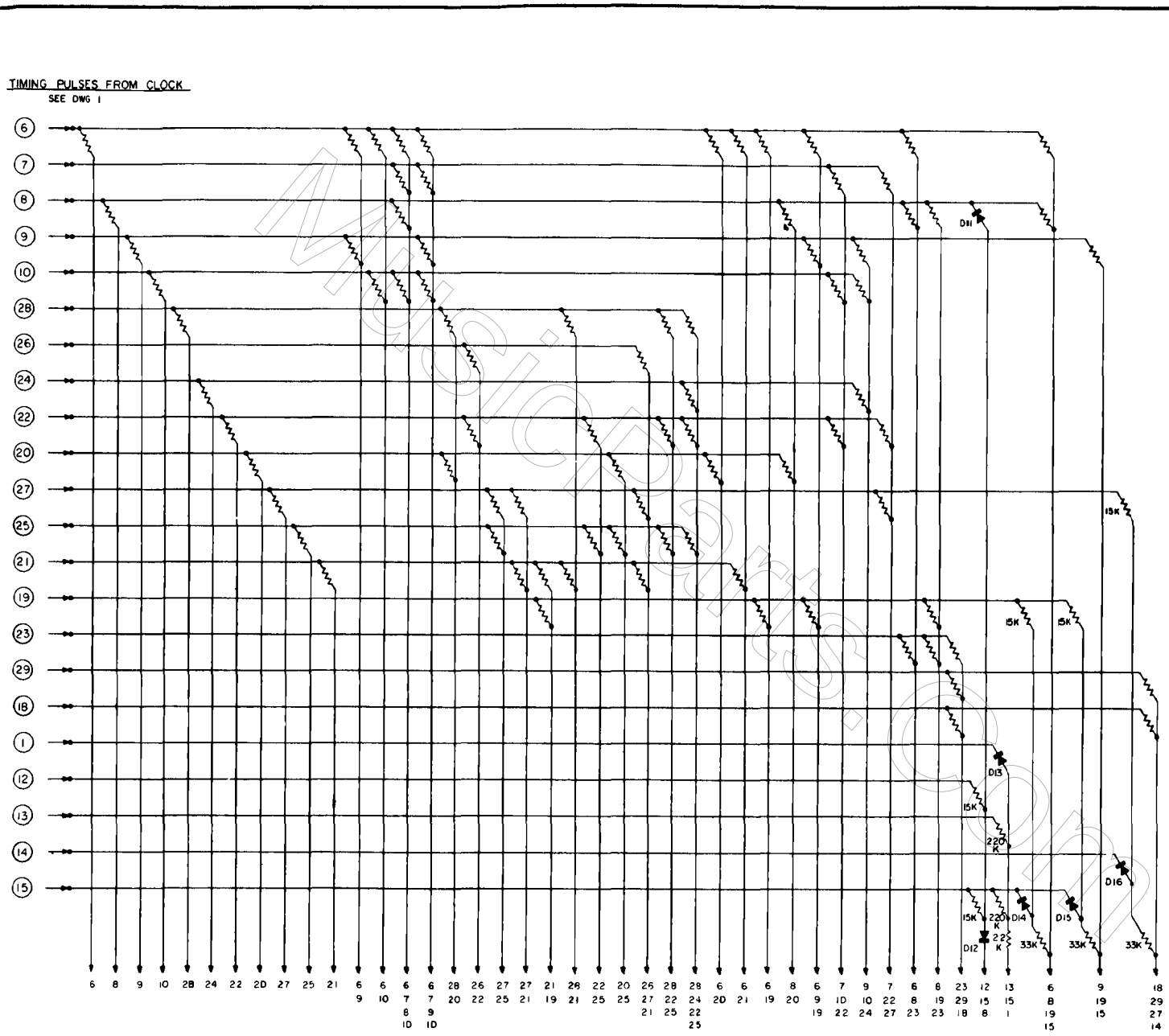
Music Room.com


12 LOGIC GATES
5 STAGE LOGIC SEQUENCER
5 PULSE AMPS
5 STAGE MULTIVIBRATOR
DOWN BEAT INDICATOR
DOWN BEAT LAMP
HI HAT CYMBAL DAMPEN CONTROL (SWING ONLY)
RESET FOOT SWITCH "ON"
STABILIZER
TEMPO CONTROL (SPEED)
TRIPLET CONTROL SEE DWG 3
TEMPO B+ FOR TRIPLET TIMING TO SELECTOR SWITCH SEE DWG 3
CLOCK
DWG. NO 1 MODEL MRK-I
NOTES:
1 ALL RESISTORS 1/2 WATT 10% UNLESS OTHERWISE SPECIFIED
2 ALL CAPACITOR ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED
3 ALL VOLTAGES MEASURED TO GROUND WITH A SIMPSON 260 VOM.
4. SEE PARTS LIST FOR COMPONENT PART NUMBERS
5 * DENOTES FACTORY TAILORED COMPONENTS

MusicPartsOnly.com


NOTES:
1 ALL RESISTORS 1/2 WATT 10% UNLESS OTHERWISE SPECIFIED.
2 ALL CAPACITOR ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
3 ALL VOLTAGES MEASURED TO GROUND WITH A SIMPSON 260 VOM.
4. SEE PARTS LIST FOR COMPONENT PART NUMBERS
5 * DENOTES FACTORY TAILORED COMPONENTS
CLOCK
AFTER SERIAL NO 09001
DWG NO 1 MODEL MRK-I
12 LOGIC GATES
5 STAGE LOGIC SEQUENCER
DOWN BEAT INDICATOR
DOWN BEAT LAMP
HI HAT CYMBAL DAMPEN CONTROL (SWING ONLY)
RESET FOOT SWITCH
TEMPO REGULATOR
TEMPO CONTROL (SPEED)
TEMPO B+ TO SEL SW'S SEE DWG 3
STABILIZER
5 PULSE AMPS
5 STAGE MULTIVIBRATOR
FROM TRIPLET CONTROL SEE DWG 3
TRIPLETT CONTROL SEE DWG.3

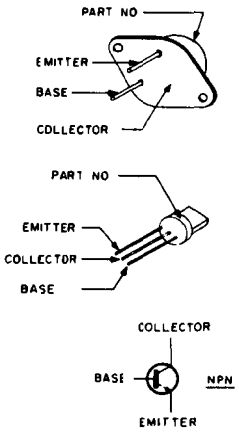
MusicPartsCom



SPECIAL SCHEMATIC SYMBOLS

1. CLOCK OUTPUT PULSES ARE SHOWN AS CIRCLED NUMBERS
2. COMBINED CLOCK OUTPUT PULSES FROM THE MATRIX ARE SHOWN AS NUMBERS OR NUMBER COMBINATIONS
3. INSTRUMENTATION KEYING POINTS ARE SHOWN BOXED
4. RHYTHM SELECTOR SWITCH CONTROL FUNCTIONS ARE SHOWN AS TRIANGLES WITH THE LETTER 'Y' OR 'Z' INSIDE GROUND AND +6V ARE ALSO USED AS CONTROL FUNCTIONS, HOWEVER, THEY ARE DENOTED WITH THEIR STANDARD SCHEMATIC SYMBOLS
5. CIRCLED CLOCK OUTPUT PULSES "2" AND "17" ARE USED AS CONTROL FUNCTIONS ONLY, THEY CONNECT DIRECTLY TO THE RHYTHM SELECTOR SWITCHES

TRANSISTOR CONFIGURATIONS



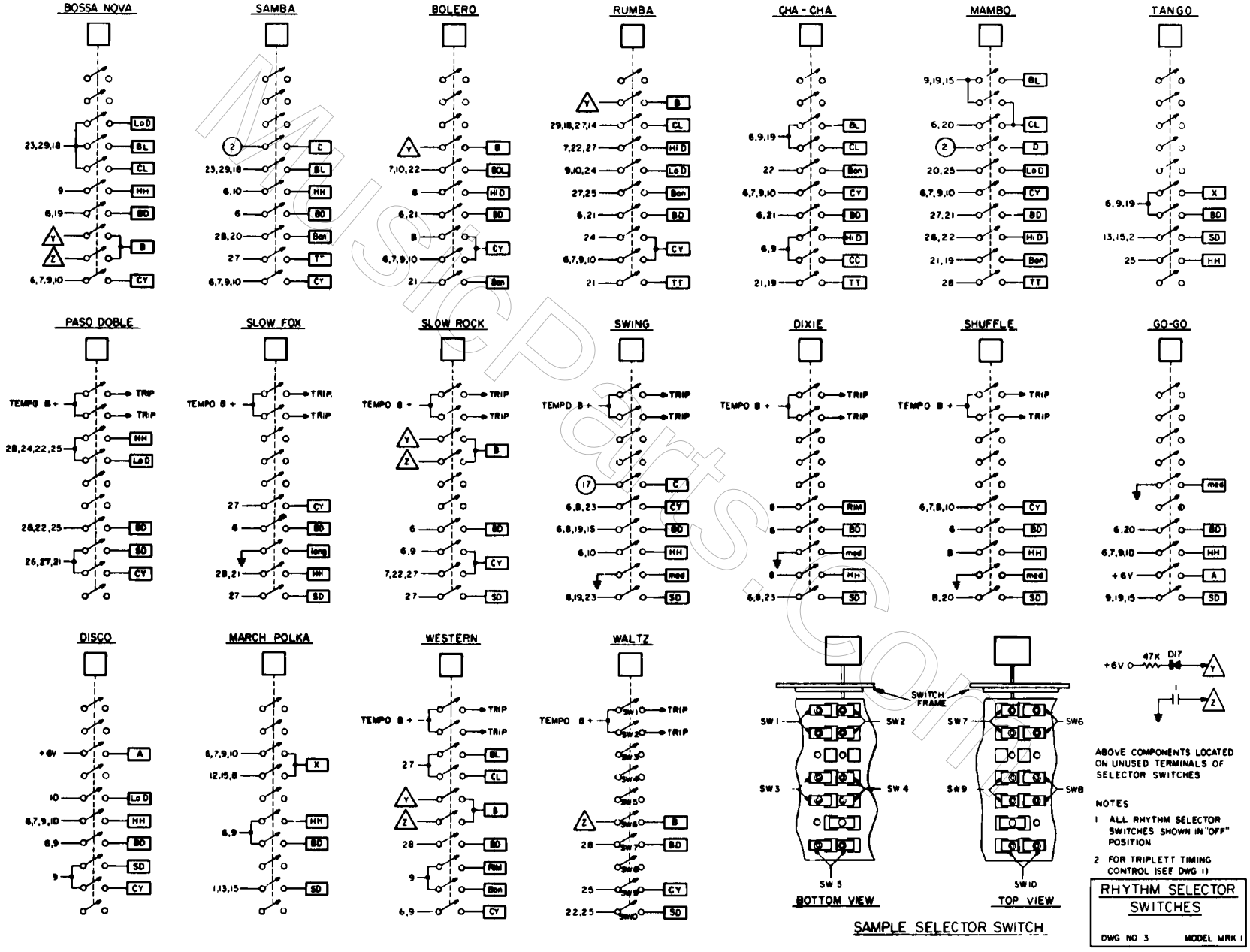
NOTES

1. ALL RESISTORS ARE 47K UNLESS OTHERWISE SPECIFIED
2. ALL RESISTORS 1/2 WATT 10% UNLESS OTHERWISE SPECIFIED
3. SEE PARTS LIST FOR COMPONENT PART NUMBERS

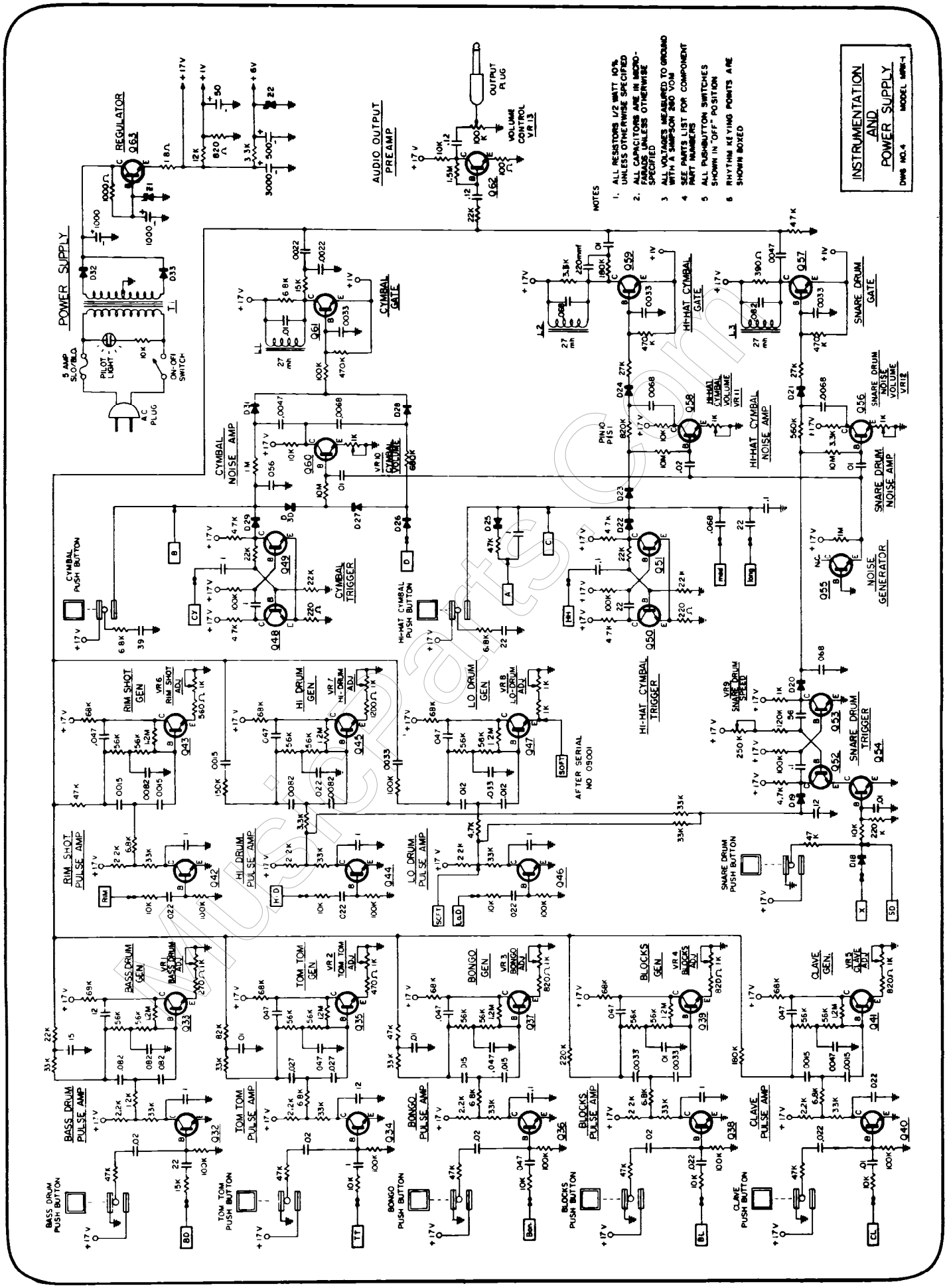
MATRIX

DWG NO 2 MODEL MRK-1

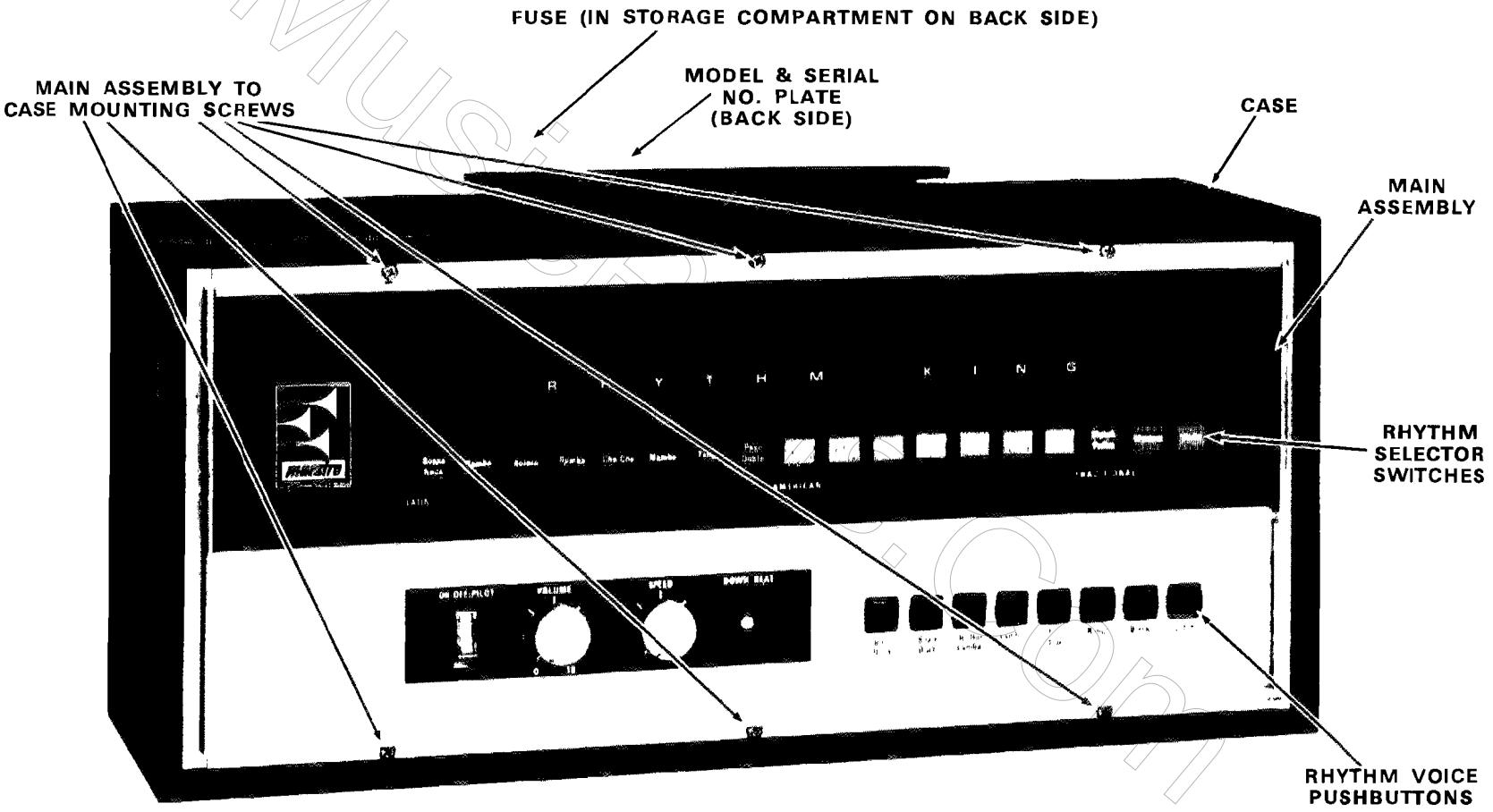
Music Electronics Corp



MusicPartsCo.com


INSTRUMENTATION AND POWER SUPPLY
DWG NO.4 MODEL MRR-1
NOTES
1. ALL RESISTORS 1/2 WATT 10% UNLESS OTHERWISE SPECIFIED
2. ALL CAPACITORS ARE IN MICRO-FARADS UNLESS OTHERWISE SPECIFIED
3 ALL VOLTAGES MEASURED TO GROUND WITH A SIMPSON 260 VOM
4 SEE PARTS LIST FOR COMPONENT PART NUMBERS
5 ALL PUSHBUTTON SWITCHES SHOWN IN 'OFF' POSITION
6 RHYTHM KEYING POINTS ARE SHOWN BOXED
POWER SUPPLY
REGULATOR
AUDIO OUTPUT PREAMP
OUTPUT PLUG
VOLUME CONTROL VR13
CYMBAL NOISE AMP
CYMBAL GATE
CYMBAL TRIGGER
CYMBAL PUSH BUTTON
HI-HAT CYMBAL GATE
HI-HAT CYMBAL NOISE AMP
HI-HAT CYMBAL TRIGGER
HI-HAT CYMBAL PUSH BUTTON
SNARE DRUM GATE
SNARE DRUM NOISE AMP
SNARE DRUM TRIGGER
SNARE DRUM PUSH BUTTON
NOISE GENERATOR
RIM SHOT GEN
RIM SHOT PULSE AMP
HI DRUM GEN
HI DRUM PULSE AMP
LO DRUM GEN
LO DRUM PULSE AMP
BASS DRUM GEN
BASS DRUM PULSE AMP
TOM TOM GEN
TOM TOM PULSE AMP
BONGO GEN
BONGO PULSE AMP
BLOCKS GEN
BLOCKS PULSE AMP
CLAVE GEN.
CLAVE PULSE AMP

COMPLETE UNIT

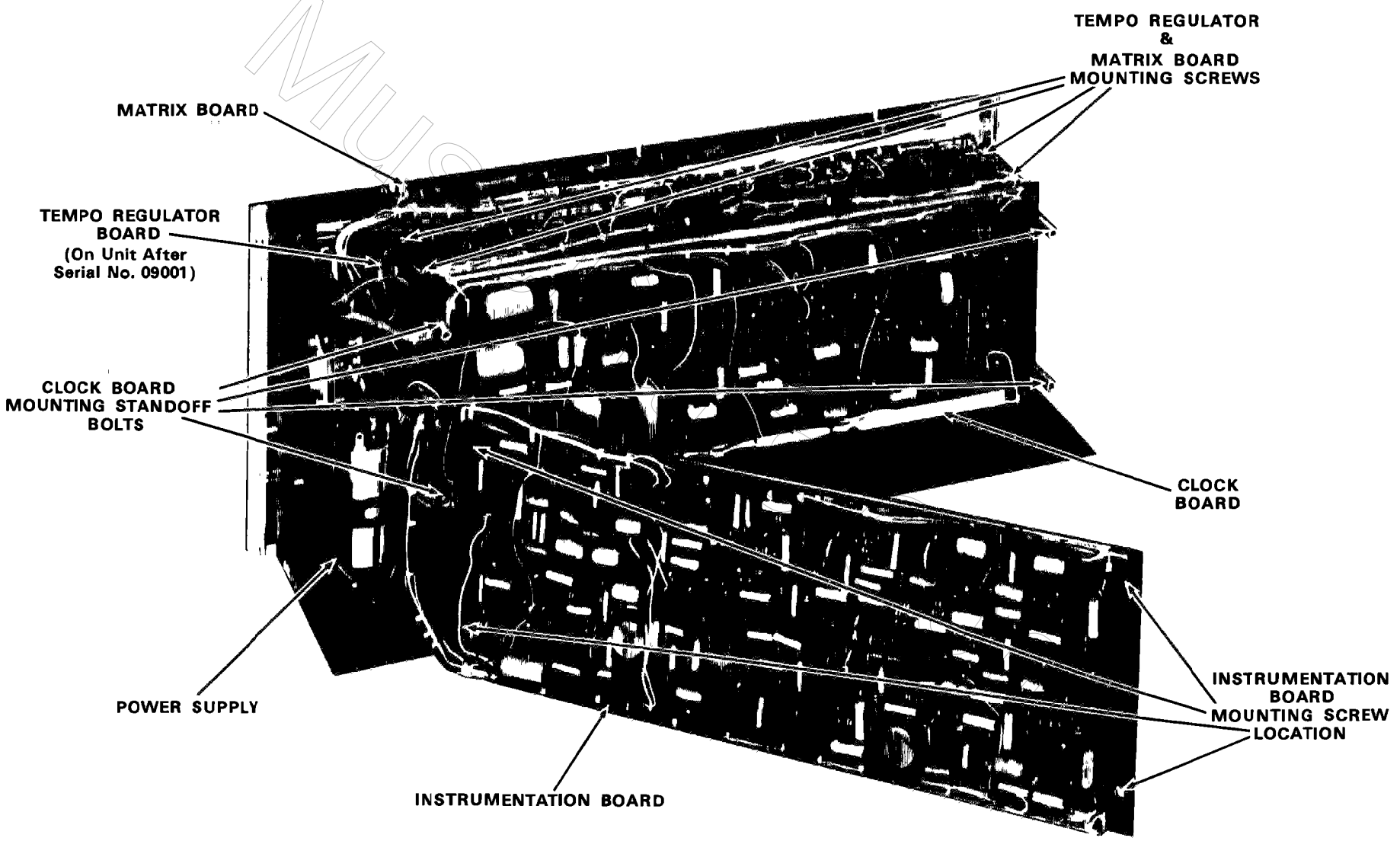

FUSE (IN STORAGE COMPARTMENT ON BACK SIDE)
MODEL & SERIAL NO. PLATE (BACK SIDE)
MAIN ASSEMBLY TO CASE MOUNTING SCREWS
CASE
MAIN ASSEMBLY
RHYTHM SELECTOR SWITCHES
RHYTHM VOICE PUSHBUTTONS
R H Y T H M K I N G

To Remove Main Assembly from Case:

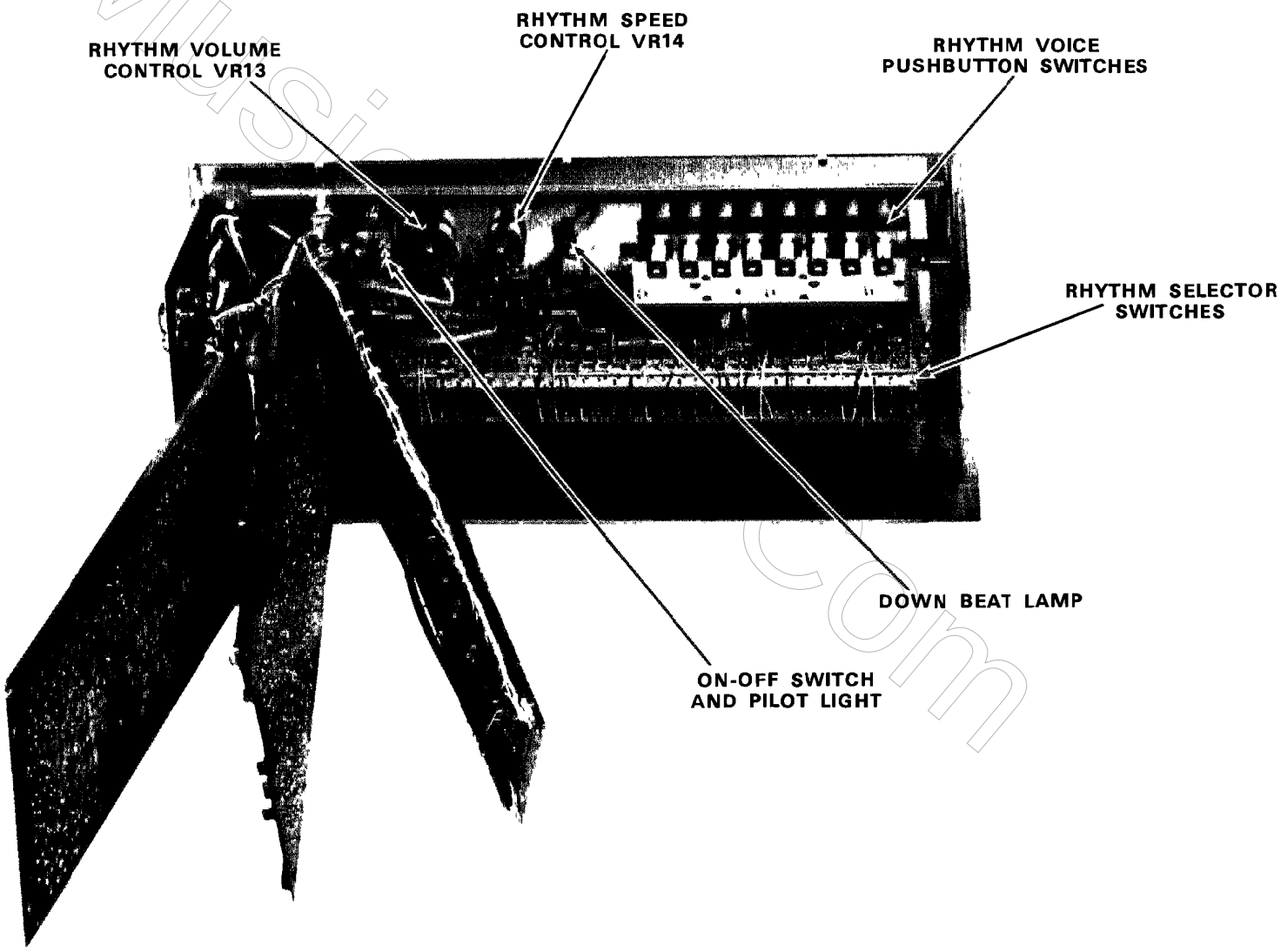
1. **Remove six mounting screws on front of Main Assembly.**
2. **Lay complete unit face down (use care).**
3. **Lift case up and off.**

MusicRadar.com

MAIN ASSEMBLY
(Instrumentation Board Removed)

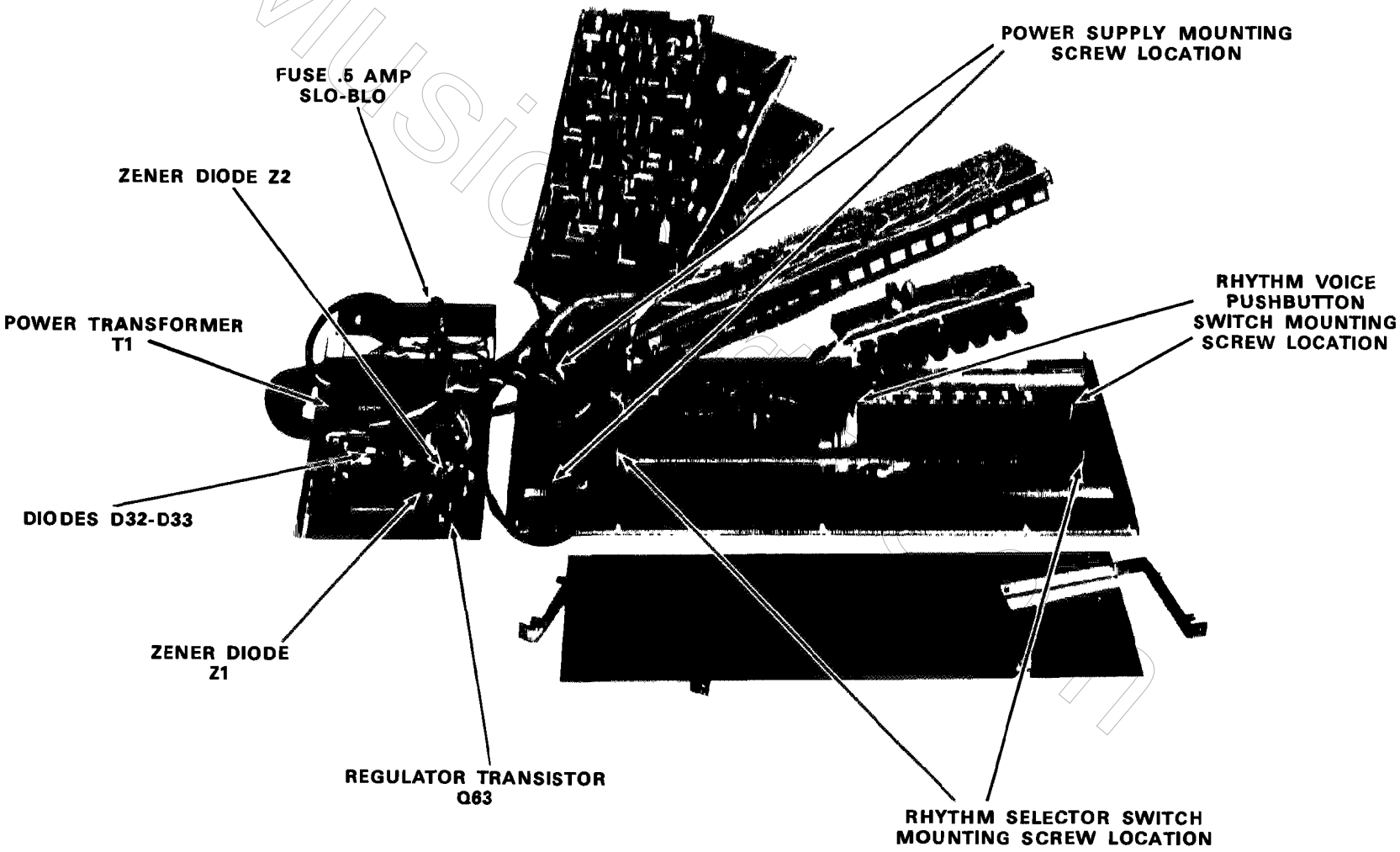


MAIN ASSEMBLY
(Printed Circuit Boards Removed)

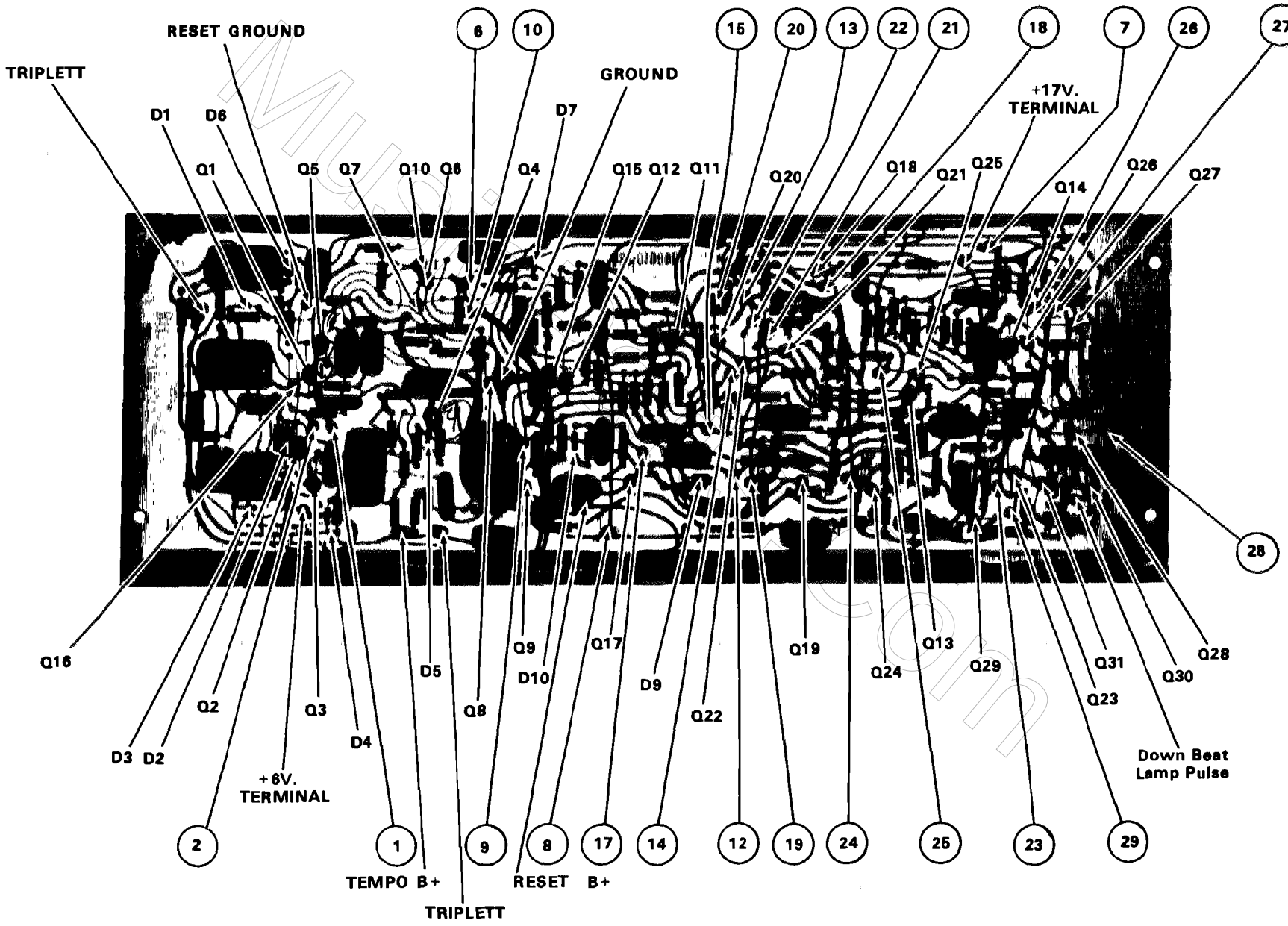


MusicMan.com

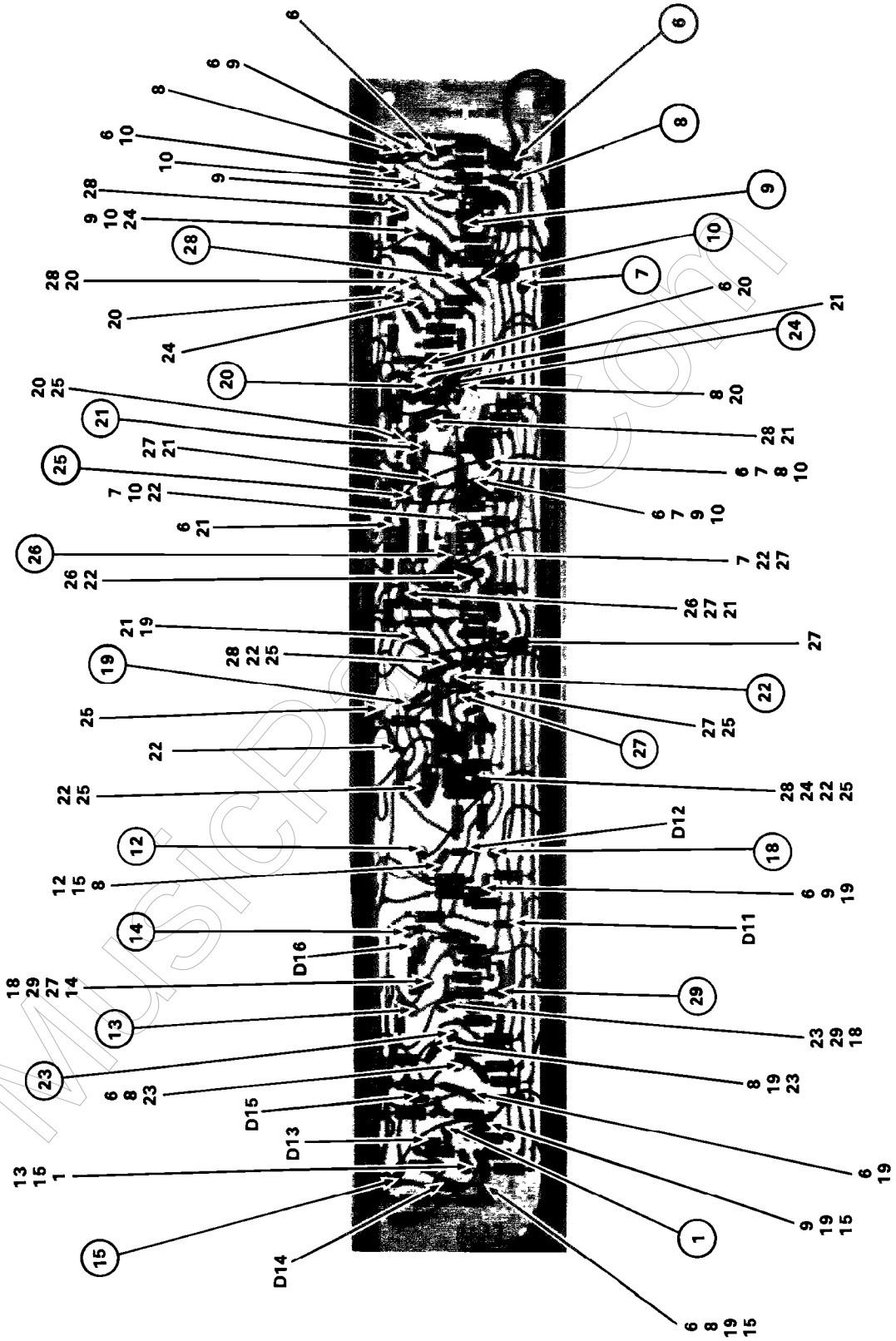
MAIN ASSEMBLY
(Disassembled)


POWER SUPPLY MOUNTING SCREW LOCATION
FUSE .5 AMP SLO-BLO
ZENER DIODE Z2
RHYTHM VOICE PUSHBUTTON SWITCH MOUNTING SCREW LOCATION
POWER TRANSFORMER T1
DIODES D32-D33
ZENER DIODE Z1
REGULATOR TRANSISTOR Q63
RHYTHM SELECTOR SWITCH MOUNTING SCREW LOCATION

CLOCK BOARD


RESET GROUND
TRIPLETT
D1
D6
Q1
Q5
Q7
Q10
Q8
Q4
D7
GROUND
Q15
Q12
Q11
Q20
Q18
Q21
Q25
+17V.
TERMINAL
Q14
Q26
Q27
6
10
15
20
13
22
21
18
7
26
27
28
Q16
D3
D2
Q2
+6V.
TERMINAL
Q3
D4
D5
Q8
Q9
D10
Q17
D9
Q22
Q19
Q24
Q13
Q29
Q31
Q30
Q28
Q23
Down Beat
Lamp Pulse
2
1
9
8
17
14
12
19
24
25
23
29
TEMPO B+
TRIPLETT
RESET
B+

MATRIX BOARD



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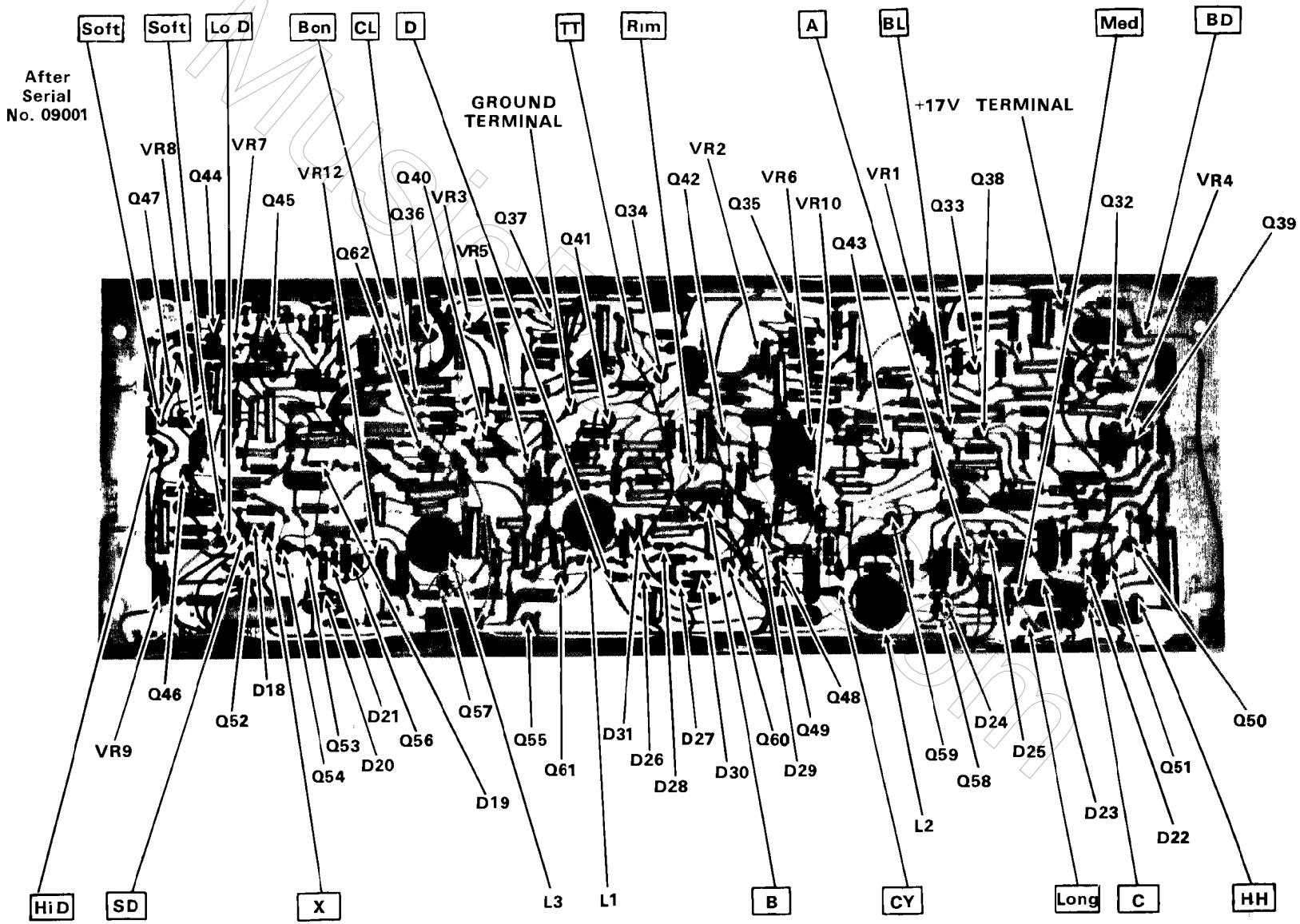
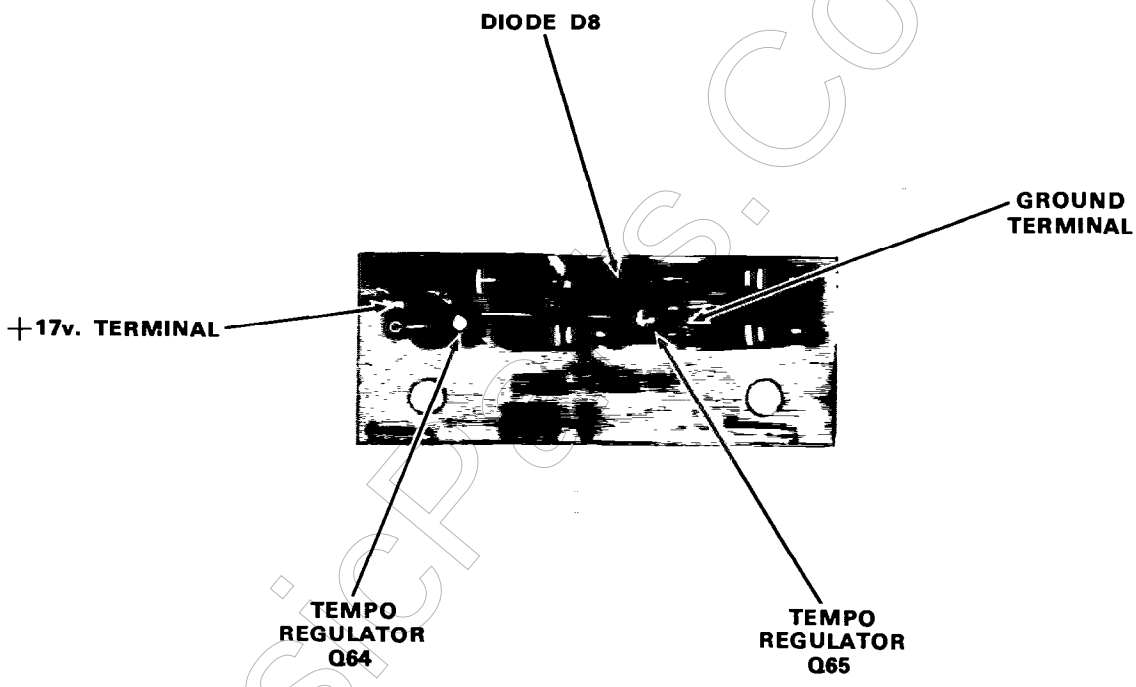
INSTRUMENTATION BOARD



TEMPO REGULATOR BOARD



Note:
The Tempo Regulator circuit has been added on units after serial number 09001.
The function of the Tempo Regulator circuit is to hold the rhythm tempo constant as selections are made between triplet and non-triplet timed rhythms.

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WARRANTY SERVICE

The Maestro Rhythm King is warranteed for one year from date of sale to the original owner. Should the Maestro require factory repair. write to the following for authorization to return the unit for sevice:

MAESTRO, Service Manager
7373 N. Cicero Ave.
Lincolnwood, Illinois 60646

There is no charge for service during the warranty period, providing the service required is not a result of unauthorized tampering, abuse, or damage . . . and provided examination, in our judgment, discloses some defect. The repaired Maestro will be returned freight collect, insured.

IMPORTANT

WRITTEN AUTHORIZATION MUST ACCOMPANY UNIT RETURNED FOR SERVICE

PARTS INFORMATION

Standard Parts

Replacements for all standard electronic parts and hardware can be purchased directly from local suppliers generally in less time than would be required to obtain them from the factory.

Special Parts

In addition to the standard replacement parts, special electronic parts and mechanical parts are also used. These parts are manufactured by and to the specifications of the Maestro factory. Order these parts directly from Maestro since they would be difficult or impossible to obtain from other sources.

Parts Ordering Information

When ordering parts be sure to include the following information:

1. Model and Serial Number
2. Part Number
3. A description of the part
4. Specify how you want the part shipped.

Most special electronic parts and mechanical parts will have a part number stamped on them. In the event that the part number is missing, or you are unable to read the part number, a complete description of the part and where it is used will allow the factory to fill your parts order. When parts are ordered in the proper manner the factory is able to fill your orders promptly —delays that might result are avoided.

Address Parts Orders To:

CMI Service Dept.
7373 No. Cicero
Chicago, Illinois 60646

IMPORTANT

In any correspondence concerning this instrument
ALWAYS INCLUDE MODEL AND SERIAL NUMBERS.

MusicParts.com

PARTS LIST

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RHYTHM SELECTOR SWITCHES 28
CABINET ASSEMBLY 28
TEMPO REGULATOR BOARD (From Serial No. 09001) 28

THE PARTS LIST CONTAINS THE FOLLOWING INFORMATION:

1. Name of Part
2. Value, Tolerance and Code (when important)
3. Brief description
4. Where the part is found (assembly, printed circuit board and etc.)
5. Schematic Reference Number
6. PART NUMBER — USE IT!

This parts list includes all standard stock replacement parts. No attempt has been made to include every nut, bolt and screw. If the necessity for a non listed part arises, please write describing the parts location and function as well as model and serial number of the unit.

PARTS LIST

PART	DESCRIPTION	SCHEMATIC REFERENCE	PART NUMBER
MATRIX BOARD ASSEMBLY			
Assembly	Matrix Board Complete		996-010966
Diode		D11-D16	919-004799
POWER SUPPLY			
Assembly	Power Supply Complete		997-010963
Capacitor	Electrolytic 3000-500 @ 25V		945-010847
Capacitor	Electrolytic 1000 UF 25V		945-008895-49
Capacitor	Electrolytic 1000 UUF 40V		945-003861-1
Cord	Power		989-008717-2
Diode		D32 & D33	919-010829
Diode	Zener	Z1	919-003309
Diode	Zener	Z2	919-001445
Fuse	Slo-Blo .5Amp		939-013304-8
Holder	Fuse		906-006303
Insulator	(Regulator Transistor)		908-002346
Transformer	Power	T1	954-010843
Transistor	Regulator	Q63	992-003139

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PARTS LIST

PART	DESCRIPTION	SCHEMATIC REFERENCE	PART NUMBER
INSTRUMENTATION			
Assembly	Instrumentation Board		996-010982
Capacitor	Electrolytic 50 UF 20V Polarized		945-008895-12
Capacitor	Mylar .1 UF 10% 50V		946-002155-104
Capacitor	Mylar .12 UF 10% 50V		946-002155-124
Capacitor	Mylar .15 UF 10% 50V		946-002155-154
Capacitor	Mylar .22 UF 10% 50V		946-002155-224
Capacitor	Mylar .56 UF 10% 50V		946-002155-564
Capacitor	Mylar .01 UF 10% 50V		946-002155-103
Capacitor	Mylar .012 UF 10% 50V		946-002155-123
Capacitor	Mylar .015 UF 10% 50V		946-002155-153
Capacitor	Mylar .022 UF 10% 50V		946-002155-223
Capacitor	Mylar .027 UF 10% 50V		946-002155-273
Capacitor	Mylar .033 UF 10% 50V		946-002155-333
Capacitor	Mylar .047 UF 10% 50V		946-002155-473
Capacitor	Mylar .056 UF 10% 50V		946-002155-563
Capacitor	Mylar .068 UF 10% 50V		946-002155-683
Capacitor	Mylar .082 UF 10% 50V		946-002155-823
Capacitor	Mylar .0015 UF 10% 50V		946-002155-152
Capacitor	Mylar 0022 UF 10% 50V		946-002155-222
Capacitor	Mylar .0033 UF 10% 50V		946-002155-332
Capacitor	Mylar .0039 UF 10% 50V		946-002155-392
Capacitor	Mylar .0047 UF 10% 50V		946-002155-472
Capacitor	Mylar .0068 UF 10% 50V		946-002155-682
Capacitor	Mylar .0082 UF 10% 50V		946-002155-822
Capacitor	Ceramic 200 UUF 10% 500V		947-002630-201
Coil		L1-L3	952-003308
Diode		D18-D31	919-004799
Potentiometer	250K	VR9	925-004349-2
Potentiometer	1K	VR1-8, VR10-12	925-004349-1
Transistor	Snare, Hi-Hat, Cymbal & Audio Output	Q56-62	991-002356
Transistor	Noise Generator	Q55	991-003304
Transistor	All others except above	Q32-54	991-008393
CLOCK BOARD			
Assembly	Clock Board		996-010980
Capacitor	Mylar .1 UF 10% 50V		946-002155-104
Capacitor	Mylar .15 UF 10% 50V		946-002155-154
Capacitor	Mylar .22 UF 10% 50V		946-002155-224
Capacitor	Mylar .047 UF 10% 50V		946-002155-473
Capacitor	Mylar 1.0 UF 10% 50V		946-002155-106
Capacitor	Electrolytic 2 UF 20V		945-008895-032
Diode		D9-D10	919-004799
Diode	Germanium	D1-7	919-010867
Transistor	Five Stage Multivibrator	Q1-Q5	991-002356
Transistor	Amps, Sequencer, Gates, Down Beat & Stabilizer	Q6-16, Q18-31	991-008393
Transistor	Hi-Hat Dampen Control	Q17	991-008394
RHYTHM PUSHBUTTON SWITCHES			
Button	Black		915-003329-4
Capacitor	Mylar .22 UF 10% 50V		946-002343-224
Capacitor	Mylar .39 UF 10% 50V		946-002343-394

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PARTS LIST

PART	DESCRIPTION	SCHEMATIC REFERENCE	PART NUMBER
Capacitor	Ceramic .02 UF 25V		947-010539-203
Spring	Keyswitch contact		917-003134
Spring	Compression		975-008286
Switch	Actuator Bass		964-008211
Tab	Stop (felt)		914-008202

RHYTHM SELECTOR SWITCHES

Button	Rhythm Selector		915-010840
Capacitor	Mylar .1 UF 10% 50V		946-002343-104
Diode		D17	919-004799
Insert	Bossa Nova		915-011544-1
Insert	Samba		915-011544-2
Insert	Bolero		915-011544-3
Insert	Rumba		915-011544-4
Insert	ChaCha		915-011544-5
Insert	Mambo		915-011544-6
Insert	Tango		915-011544-7
Insert	Paso Doble		915-011544-8
Insert	Slow Fox		915-011544-9
Insert	Slow Rock		915-011544-10
Insert	Swing		915-011544-11
Insert	Dixie		915-011544-12
Insert	Shuffle		915-011544-13
Insert	Go-Go		915-011544-14
Insert	Disco		915-011544-15
Insert	March Polka		915-011544-16
Insert	Western		915-011544-17
Insert	Waltz		915-011544-18

CABINET ASSEMBLY

Assembly	Reset Foot Switch		935-010863
Cable	Output		989-010864
Cable	Adapter		957-011542
Capacitor	Electrolytic 2 UF 20V		945-008895-32
Cover	Vinyl		972-011597
Knob	Speed and Volume		915-010812
Light	Pilot		939-010862
Potentiometer	Rhythm Volume	VR13	925-010814
Potentiometer	Rhythm Speed	VR14	925-010814-1
Switch	A.C.		960-010075

TEMPO REGULATOR BOARD (From Serial No. 09001)

Assembly	Tempo Regulator Board		996-012044
Transistor	Tempo Regulator Board	Q64, Q65	991-008393
Diode		D8	919-004799

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